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622.34 Hazardous Mine
L3hmog Opening Project,
1989 Phase 21

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FINAL REPORT

HAZARDOUS MINE OPENING PROJECT, PHASE 21
GRANITE COUNTY, MONTANA
Mont. A/E 88-46-101

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L3hmog Opening Project,

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GRANITE COUNTY, MONTANA
Mont. A/E 88-46-101

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1989 Phase 21

DATE

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FINAL REPORT
HAZARDOUS MINE OPENING PROJECT PHASE 21
GRANITE COUNTY, MONTANA
Mont. A/E 88-46-101

Prepared for:

State of Montana
Department of State Lands
Abandoned Mine Reclamation Bureau
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Helena, Montana 59620

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November 9, 1989

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I. INTRODUCTION

1.1 OVERVIEW

Hard rock mining has taken place in Montana since 1862 and was essentially unregulated from a reclamation standpoint for over one hundred years. This resulted in thousands of hazardous shafts and adits in mining districts across the state. The hazards associated with these mine openings are many and range from bad air to falling rock and cave-ins.

1.2 PROJECT OBJECTIVES

The Phase 21 Hazardous Mine Opening Project was designed and executed with the intent of eliminating accidental or unauthorized exposure to hazards existing at a number of abandoned hard rock mines in Granite County.

Backfilling was the preferred reclamation option for closing hazardous adits and shafts but alternative methods (eg. bulkheads, fencing) were utilized at the owners request.

1.3 PROJECT LOCATION

This project included approximately 120 openings at 39 sites located in five mining districts in Granite County, Montana. Legal descriptions are listed in Table 1 and site locations are shown on the vicinity maps in Appendix A.

1.4 HISTORY

Mining in Montana began in the early 1860's with several years of placer mining preceding the discovery of lode deposits in most districts. The levels of mining activity fluctuated until 1905 when many of the mines were abandoned. Present activity includes limited mining and exploration.

The following narrative briefly describes mining history in districts involved in the Phase 21 Hazardous Mine Opening Project.

COMBINATION MINING DISTRICT, GRANITE COUNTY - Mining in the Combination district began in 1885 with the development of the Combination mine. The Sunrise Queen mine was worked from time to time between 1882 and 1903. An estimated \$1,650,000 worth of gold and silver was produced from this district.

TABLE 1

PHASE 21 PROJECT LOCATIONS

PA #	COUNTY	DISTRICT	SITE NAME	LEGAL DESCRIPTION
20-077	Granite	Combination	Bunker Hill	T08N R14W S02 NE NW
20-036	Granite	Combination	Sunrise/Queen	T08N R14W S03 NE NE
20-075	Granite	Dunkleberg	Cominco Phosphate	T09N R12W S31 SW SE
20-121	Granite	Dunkleberg	SE Section 14	T09N R12W S14 SE
20-118	Granite	Dunkleberg	SE Section 15	T09N R12W S15 SE SE
20-023	Granite	Dunkleberg	Wasa	T09N R12W S27 SW SW
20-076	Granite	Maxville	Copper State	T08N R13W S05 NE NW
20-120	Granite	Maxville	Hattie	T08N R13W S06 NE SE
20-112	Granite	Maxville	Londonderry	T08N R13W S05 NE SE
20-113	Granite	Maxville	Red Cloud	T08N R13W S05 NE SW
20-066	Granite	Maxville	Royal Basin	T08N R13W S21 SW SE
20-148	Granite	Maxville	SW Section 5	T08N R13W S05 SE SW
20-147	Granite	Maxville	Sawmill Creek	T08N R14W S36 NE NW
20-123	Granite	Maxville	Snow Cap	T08N R12W S18 NW SW
20-005	Granite	Philipsburg	Algonquin	T07N R13W S30 SE SE
20-014	Granite	Philipsburg	Baier	T07N R14W S36 SW NE
20-074	Granite	Philipsburg	Cliff Gulch	T07N R13W S30 SW SW
20-043	Granite	Philipsburg	Durango	T07N R13W S30 NE NW
20-157	Granite	Philipsburg	Field/Porter	T07N R13W S19 NW SW
20-110	Granite	Philipsburg	Granite Mountain	T07N R13W S32 NE SE
20-039	Granite	Philipsburg	Hobo Group	T07N R13W S29 SW NW
20-051	Granite	Philipsburg	Hope Hill	T07N R13W S19 SW NE
20-071	Granite	Philipsburg	Little Gem	T07N R13W S30 NE SW
20-106	Granite	Philipsburg	Lower Frost Creek	T07N R13W S30 SW SW
20-108	Granite	Philipsburg	Puritan	T07N R13W S29 SE NW
20-033	Granite	Philipsburg	San Francisco	T07N R13W S30 SW SW
20-019	Granite	Philipsburg	Scratch All	T07N R13W S30 NE SE
20-156	Granite	Philipsburg	Shapleigh	T07N R14W S24 NE SE
20-206	Granite	Philipsburg	South Franklin Hill	T07N R13W S31 NE SE
20-062	Granite	Philipsburg	Trout	T07N R13W S30 NE SE
20-111	Granite	Philipsburg	True Fissure	T07N R13W S30 SW NE
20-073	Granite	Philipsburg	Wenger #2	T07N R13W S30 SW SW
20-072	Granite	Philipsburg	White Horse	T07N R13W S30 NE SW
20-026	Granite	South Boulder	Brooklyn	T07N R12W S05 SE NW
20-064	Granite	South Boulder	Copper Creek	T07N R12W S05 NW NW
20-089	Granite	South Boulder	Gold Hill	T08N R13W S35 W W
20-010	Granite	South Boulder	Moonlight	T08N R12W S20 SW SW
20-155	Granite	South Boulder	Princeton	T08N R13W S25 SW NE
20-087	Granite	South Boulder	Travonia	T08N R13W S25 SE SE

DUNKLEBERG MINING DISTRICT, GRANITE COUNTY - Little information is available on early mining in the Dunkleberg district. In 1960 a large phosphate deposit was discovered along Douglas Creek. A mill was erected in 1962 and worked continuously until October 1968 when, for economic reasons, operations ceased. Approximately 2 million tons of material were mined and milled during that time and approximately 1 million tons of phosphate concentrates were generated.

MAXVILLE MINING DISTRICT, GRANITE COUNTY - The mines of the Maxville area were never very productive, reportedly having yielded only \$75,000 worth of ore. Little history is available on this district.

PHILIPSBURG MINING DISTRICT, GRANITE COUNTY - The Hope Mine was the first in the district to be discovered in December of 1864. A mile to the south, on Camp Creek, the town of Philipsburg was founded the following year. The period of greatest prosperity for the Philipsburg area was from 1881 to 1893 when it became one of the most important silver producers in the United States. After 1916 manganese became an important product and the mines were again worked into the 1960's. The total production of the mines of the Philipsburg district has been estimated at \$50,000,000, of which \$10,000,000 was gold and the remaining \$40,000,000 was silver.

SOUTH BOULDER MINING DISTRICT, GRANITE COUNTY - Mining in this district centered around the Princeton camp which was the center of considerable mining and prospecting during the late 1880's. By 1906 mining had all but ceased in this district. It is estimated that between \$1,250,000 and \$1,500,000 was produced during that time.

1.5 SITE DESCRIPTION AND PROBLEMS

The sites included in this project are located in or near residential areas, historic sites, close to public roads or in recreation areas. All mine openings threatened public safety. The shafts involved were deep enough to prevent unaided escape upon entry. Adits were obstructed or fitted with accessing bulkheads to protect the curious from unsuspected dangers.

2.0 DESCRIPTION OF PROJECT RECLAMATION

2.1 PROJECT PLANNING

Backfill was recommended for all mine openings to permanently eliminate the hazardous mine openings. However, many landowners refused to allow backfill and accessing bulkheads or fencing were installed. These alternative methods do accomplish the goals of preventing accidental entry but are semi-permanent in nature and are subject to vandalism.

Steel grate systems used as shaft closures were fabricated by an independent contractor; Lewis D. Morris, 1814 Wilder, Helena, MT. The grates were available for transport to Phase 21 Project sites at the start of the project. This arrangement resulted in cost savings and eliminated the need for additional contract time (which would have been necessary if grate fabrication was the responsibility of the construction contractor). The following is a list of grate sizes, fabrication costs, and prices per square foot.

<u>Size</u>	<u>Cost</u>	<u>Price/Sq.Ft.</u>
10 x 10	430.00	4.30
16 x 16	1050.00	4.10
24 x 24	2350.00	4.08

2.2 CHRONOLOGICAL HISTORY

Pre-Bid Conference	June 28, 1988
Bid Opening	July 14, 1988
Contract Award	August 4, 1988
Contract Awarded To:	

Scott Construction
P.O. Box 777
East Helena, MT 59635
(406) 227-5740

Pre-Construction Meeting	August 12, 1988
Notice to Proceed	September 26, 1988
Began work	October 3, 1988
Temporary Winter Shut-Down	November 15, 1988
Resumed work	June 19, 1989
Substantial completion	August 23, 1989
Final acceptance	September 12, 1989

2.3 EQUIPMENT

5 Yard Dump Truck
Case 580 D Backhoe
JD510 Track Hoe (rented)
Michigan 75 A loader (rented)
Cat D-7 Dozer
Compressor and Air Drill
Electronic Rock Drill
1/2 ton Four Wheel Drive Truck & Portable Welder
1/3 Yard Portable Cement Mixer
Tilt Bed Trailer
100 Gallon Water Tank

2.4 CONSTRUCTION OPERATIONS

The contractor performed the following:

1. Backfilled 33 mine openings (3592.95 c.y.)
2. Installed 5 masonry adit doors
3. Installed 30 culverts with locking hatches
4. Installed 9 cable net barriers
5. Installed 14 shaft grate systems
6. Installed 339.09 rods of farm fence
7. Attached 41 "Hazard Mine Shaft" signs
8. Installed 6 steel gate adit doors
9. Blasted shut 2 mine openings
10. Constructed 5 timber sets into portal openings
11. Revegetated all area disturbed by construction activities

3.0 COST SUMMARY

3.1 FINAL PAYMENT REQUEST

A copy of the Final Payment Request is contained in Appendix B. That document contains the final quantities and costs for each work item.

3.2 CHANGE ORDERS

Seven Change Orders and four Work Directive Changes were executed during the Phase 21 construction period for a total net change in contract price of (+) \$32,512.29 which represents 27% of the project total. Copies of the Change Orders and Work Directives are also included in Appendix B.

3.3 Cost Per District

Table 2 details the work performed (with measured quantities) for each mine opening included in the Phase 21 Project. Each type of closure installed was contracted on a unit price cost with two exceptions; the closure of two adits by blasting and constructing 5 timber sets to allow installation of steel adit gates. These prices were negotiated with the contractor. Miscellaneous site work and mobilization cost were bid on a lump sum basis.

It was estimated that a total of 4.72 acres were disturbed by construction activities. Approximately 3.82 acres were disturbed at backfill sites, the remaining .9 acre was distributed equally between the culvert sites. All other types of closures were performed with negligible disturbance. Based on the total price bid for miscellaneous site work, the cost per acre for revegetation was calculated at \$953.39/acre (\$4,500/4.74 acres).

Below are the totals for each Mining District and the Completed Project. The average site cost was calculated at \$4,440.27 (\$173,170.37/39 sites) and the average closure cost was calculated at \$1,443.09 (\$173,170.37/120 closures).

Combination Mining District	\$ 5,353.60
Dunkleberg Mining District	\$ 18,973.35
Maxville Mining District	\$ 5,826.90
Philipsburg Mining District	\$ 123,334.97
South Boulder Mining District	\$ 12,181.54
Mobilization	\$ 7,500.00

Total Phase 21 Construction Cost	\$ 173,170.37

TABLE 2
PHASE 21 QUANTITIES AND COSTS

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED	C.Y.	RODS	SIGNS	ACRES	COST
Combination	Bunker Hill	1	Cable Net	Culvert					1575.00
Combination	Bunker Hill		Site Work					.03	28.60
Combination	Sunrise/Queen	2	Cable Net	Cable Net					750.00
Combination	Sunrise/Queen	3	Cable Net	Cable Net					750.00
Combination	Sunrise/Queen	4	Cable Net	Cable Net					750.00
Combination	Sunrise/Queen	5	Cable Net	Cable Net					750.00
Combination	Sunrise/Queen	6	Cable Net	Cable Net					750.00

Combination	Total							.03	\$ 5,353.60
Dunkleberg	Cominco Phosphate 1		Adit Door	Adit Gate					2000.00
Dunkleberg	Cominco Phosphate 1		-	Timber Set					230.00
Dunkleberg	Cominco Phosphate 2		Adit Door	Blast					900.00
Dunkleberg	Cominco Phosphate 3		Adit Door	Adit Gate					2000.00
Dunkleberg	Cominco Phosphate 3		-	Timber Set					230.00
Dunkleberg	Cominco Phosphate 4		Adit Door	Adit Gate					2000.00
Dunkleberg	Cominco Phosphate 4		-	Timber Set					230.00
Dunkleberg	Cominco Phosphate 5		Adit Door	Adit Gate					2000.00
Dunkleberg	Cominco Phosphate 5		-	Timber Set					230.00
Dunkleberg	Cominco Phosphate 6		Adit Door	-					
Dunkleberg	Cominco Phosphate 7		Adit Door	Adit Gate					2000.00
Dunkleberg	Cominco Phosphate 7		-	Timber Set					230.00
Dunkleberg	SE Section 14	8	Backfill	Backfill	978				3902.22
Dunkleberg	SE Section 14	9	Backfill	Backfill	18				71.82
Dunkleberg	SE Section 14	10	Backfill	Backfill	2.6				10.37
Dunkleberg	SE Section 14	11	Backfill	Backfill	31				123.69
Dunkleberg	SE Section 14	12	Backfill	-					
Dunkleberg	SE Section 14	13	Backfill	Backfill	27				107.73
Dunkleberg	SE Section 14		Site Work					1.05	1001.06
Dunkleberg	SE Section 15	14	Backfill	Backfill	21				83.79
Dunkleberg	SE Section 15		Site Work					.02	19.07
Dunkleberg	Wasa	15	Backfill	Culvert					1575.00
Dunkleberg	Wasa		Site Work					.03	28.60

Dunkleberg	Total				1077.6			1.10	\$18,973.35

Table 2 (continued)

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED	C.Y.	RODS	SIGNS	ACRES	COST
Maxville	Copper State	1	Cable Net	Culvert					1575.00
Maxville	Copper State	2	Backfill	Backfill	88.9				354.71
Maxville	Copper State		Site Work					.12	114.41
Maxville	Hattie	3	Backfill	Backfill	83.3				332.37
Maxville	Hattie	4	Backfill	Backfill	37				147.63
Maxville	Hattie		Site Work					.11	104.87
Maxville	Londonderry	5	Backfill	Backfill	27.2				108.53
Maxville	Londonderry	6	Backfill	Backfill	111				442.89
Maxville	Londonderry	7	Backfill	Backfill	33.3				132.87
Maxville	Londonderry	8	Backfill	-					
Maxville	Londonderry		Site Work					.15	143.01
Maxville	Red Cloud	9	Backfill	Backfill	44.4				177.16
Maxville	Red Cloud		Site Work					.04	38.14
Maxville	Royal Basin	10	Backfill	Backfill	80				319.20
Maxville	Royal Basin		Site Work					.07	66.74
Maxville	Sawmill Creek	11	Backfill	Backfill	85.3				340.35
Maxville	Sawmill Creek		Site Work					.08	76.27
Maxville	Snow Cap	12	Backfill	Backfill	35.6				142.04
Maxville	Snow Cap		Site Work					.03	28.60
Maxville	SW Section 5	13	Backfill	Backfill	17.8				71.02
Maxville	SW Section 5	14	Backfill	Backfill	133.3				531.87
Maxville	SW Section 5	15	Backfill	Backfill	37				147.63
Maxville	SW Section 5	16	-	Backfill	55.6				221.84
Maxville	SW Section 5		Site Work					.22	209.75
<hr/>									
Maxville	Total				869.7			.82	\$5,826.90
Philipsburg	Algonquin	1	Fence	Fence		16.97	2		948.50
Philipsburg	Algonquin	2	Backfill	-					
Philipsburg	Baier	3	Backfill	Fence		9.82	2		591.00
Philipsburg	Cliff Gulch	4	Backfill	Backfill	17.8				71.02
Philipsburg	Cliff Gulch	5	Backfill	Blast					750.00
Philipsburg	Cliff Gulch	6	Backfill	Backfill	25.9				103.34
Philipsburg	Cliff Gulch	7	Backfill	Backfill	22.0				87.78
Philipsburg	Cliff Gulch	8	Backfill	Backfill	38.7				154.41
Philipsburg	Cliff Gulch		Site Work					.09	85.81
Philipsburg	Durango	9	Cable Net	Fence		34.12	2		1806.00
Philipsburg	Durango	10	Cable Net	-					
Philipsburg	Durango	11	Backfill	-					
Philipsburg	Durango	12	Backfill	-					
Philipsburg	Durango	13	Backfill	-					
Philipsburg	Durango	14A	Cable Net	Culvert					1575.00
Philipsburg	Durango	14B	Cable Net	Culvert					1575.00
Philipsburg	Durango	15	Cable Net	Cable Net					750.00
Philipsburg	Durango	16	Backfill	Fence		19.21	2		1060.50

Table 2 (continued)

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED C.Y.	RODS	SIGNS ACRES	COST
Philipsburg	Durango	17	Adit Door	Adit Door			1000.00
Philipsburg	Durango		Site Work			.07	66.74
Philipsburg	Field/Porter	18	Grate	Grate			3550.00
Philipsburg	Field/Porter	19	Grate	Grate			3550.00
Philipsburg	Field/Porter	20	Grate	Grate			3550.00
Philipsburg	Field/Porter	72	Grate	Grate			3550.00
Philipsburg	Granite Mountain	21	Fence	Fence	18.55	2	1027.50
Philipsburg	Granite Mountain	22	Grate	Grate			4850.00
Philipsburg	Hobo Group	23	Adit Door	Adit Gate			2000.00
Philipsburg	Hobo Group	24	Cable Net	-			
Philipsburg	Hobo Group	25	Adit Door	-			
Philipsburg	Hobo Group	26	Cable Net	Culvert			1575.00
Philipsburg	Hobo Group		Site Work			.03	28.60
Philipsburg	Hope Hill	29	Backfill	Culvert			1575.00
Philipsburg	Hope Hill	30	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	31	Backfill	Fence	6.18	2	409.00
Philipsburg	Hope Hill	32	Fence	Fence	14.67	2	833.50
Philipsburg	Hope Hill	33	Grate	Grate			3550.00
Philipsburg	Hope Hill	34	Backfill	Culvert			1575.00
Philipsburg	Hope Hill	35	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	36	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	37	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	38	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	39	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	40	Backfill	Backfill	138		550.62
Philipsburg	Hope Hill	41	Culvert	Culvert			1575.00
Philipsburg	Hope Hill	42	Backfill	Culvert			1575.00
Philipsburg	Hope Hill	43	Cable Net	Fence	48.3	3	2565.00
Philipsburg	Hope Hill	44	Backfill	Backfill	124.5		496.75
Philipsburg	Hope Hill	71	Backfill	-			
Philipsburg	Hope Hill	79	-	Culvert			1575.00
Philipsburg	Hope Hill	80	-	Fence	11.88	2	694.00
Philipsburg	Hope Hill	81	-	Culvert			1575.00
Philipsburg	Hope Hill	82	-	Culvert			1575.00
Philipsburg	Hope Hill	88	-	Fence	2.18	2	209.00
Philipsburg	Hope Hill	89	-	Fence	19.7	2	1085.00
Philipsburg	Hope Hill	91	-	Grate			2930.00
Philipsburg	Hope Hill	93	-	Grate			3550.00
Philipsburg	Hope Hill		Site Work			1.13	1077.33
Philipsburg	Little Gem	45	Grate	Sp.Grte			3300.00
Philipsburg	Little Gem	46	Culvert	Culvert			1575.00
Philipsburg	Little Gem	47	Culvert	Culvert			1575.00
Philipsburg	Little Gem		Site Work			.06	57.20
Philipsburg	Lower Frost Crk	48	Backfill	Backfill	17		67.83
Philipsburg	Lower Frost Crk	49	Culvert	Culvert			1575.00
Philipsburg	Lower Frost Crk		Site Work			.05	47.67

Table 2 (continued)

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED	C.Y.	RODS	SIGNS	ACRES	COST
Philipsburg	Puritan	50	Backfill	Backfill	619				2469.81
Philipsburg	Puritan		Site Work					.55	524.36
Philipsburg	San Francisco	51	Fence	Fence		14.06	2		803.00
Philipsburg	Scratch All	52	Steel Plate	Fence		10.24	2		612.00
Philipsburg	Scratch All	53	Backfill	Backfill	268.75				1072.31
Philipsburg	Scratch All	54,55	Fence	Fence		38.97	3		2098.50
Philipsburg	Scratch All	77	-	Grate					4850.00
Philipsburg	Scratch All		Site Work					.24	228.81
Philipsburg	Shapleigh	56	Culvert	Culvert					1575.00
Philipsburg	Shapleigh	90	-	Fence		12.36	2		718.00
Philipsburg	Shapleigh	92	-	Culvert					1575.00
Philipsburg	Shapleigh		Site Work					.07	66.74
Philipsburg	S. Franklin Hill	96	-	Fence		11.21	2		660.50
Philipsburg	Trout	57	Backfill	Backfill	60				239.40
Philipsburg	Trout	58	Fence	Fence		12.18	2		709.00
Philipsburg	Trout	59	Culvert	Culvert					1575.00
Philipsburg	Trout	60	Backfill	Backfill	80				319.20
Philipsburg	Trout	75	-	Fence		17.58	2		979.00
Philipsburg	Trout	83	-	Grate					3550.00
Philipsburg	Trout	84	-	Grate					3550.00
Philipsburg	Trout	94	-	Fence		8.06	1		453.00
Philipsburg	Trout	95	-	Culvert					1575.00
Philipsburg	Trout		Site Work					.19	181.14
Philipsburg	True Fissure	61	Cable Net	Culvert					1575.00
Philipsburg	True Fissure	62	Fence	Fence		12.85	2		742.50
Philipsburg	Wenger #2	63	Grate	Grate					4850.00
Philipsburg	Wenger #2	64	Culvert	Culvert					1575.00
Philipsburg	Wenger #2	65	Cable Net	Cable Net					750.00
Philipsburg	Wenger #2	66	Cable Net	Cable Net					750.00
Philipsburg	Wenger #2		Site Work					.03	28.60
Philipsburg	White Horse	67	Adit Door	Adit Door					1000.00
Philipsburg	White Horse	68	Cable Net	Cable Net					750.00
Philipsburg	Total				1411.65	339.09	41	2.51	\$123,334.97

Table 2 (continued)

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED C.Y.	RODS	SIGNS	ACRES	COST
South Boulder	Brooklyn	1	Cable Net	Culvert				1575.00
South Boulder	Brooklyn		Site Work				.03	28.60
South Boulder	Copper Creek	2	Backfill	Backfill 75				299.25
South Boulder	Copper Creek	3	Backfill	Backfill 159				634.41
South Boulder	Copper Creek		Site Work				.2	190.68
South Boulder	Gold Hill	8	Adit Door	Adit Door				1000.00
South Boulder	Moonlight	4	Adit Door	Adit Door				1000.00
South Boulder	Moonlight	5	Culvert	Culvert				1575.00
South Boulder	Moonlight		Site Work				.03	28.60
South Boulder	Princeton	6	Grate	Grate				4850.00
South Boulder	Travonia	7	Adit Door	Adit Door				1000.00

South Boulder	Total			234			.26	\$12,181.54
Mobilization								7,500.00
Total Phase 21 Construction Cost				3592.95	339.09	41	4.72	\$173,170.37

3.4 PROFESSIONAL SERVICE FEES

Services provided by Chen-Northern, Inc. include landowner consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, construction contract administration, quantity accounting and full time resident inspection. The project included 39 sites in Granite County resulting in extensive travel time. Construction activities were performed during two construction seasons. An analysis of these fees in relation to the Total Project Cost is included as Figure 1.

Figure 1

ANALYSIS OF PROFESSIONAL SERVICE FEES
HAZARDOUS MINE OPENING PROJECT - PHASE 21

DESIGN COSTS - Grant Preparation, Site Evaluation, Engineering and Bid Documents	\$ 16,480.44
INSPECTION COSTS - Construction Administration, Construction Inspection and Final Report	\$ 42,427.45 -----
CHEN-NORTHERN COSTS	\$ 58,907.89
STEEL GRATE FABRICATION COSTS	\$ 19,030.00
CONTRACTORS CONSTRUCTION COSTS	\$ 154,140.37 -----
TOTAL PHASE 21 CONSTRUCTION COST	\$ 173,170.37

PERCENTAGE ANALYSIS

Chen-Northern Design Cost/Total Construction Cost	9.5 %
Chen-Northern Inspection Cost/Total Construction Cost	24.5 %
Total Chen-Northern Cost/Total Construction Cost	34.0 %

4.0 SUMMARY

4.1 COMPLETED RECLAMATION

The original Phase 21 contract specified reclamation consisting of 12 steel grates, 14 culverts, 20 cable nets, 10 masonry adit doors, 5 steel adit gates, 106 rods of farm fencing, attaching 27 signs and 3992 cubic yards of backfill. The actual work constructed amounted to installing 14 steel grates, 30 culverts, 9 cable nets, 5 masonry adit doors, 6 steel adit gates, erecting 339.09 rods of farm fencing, attaching 41 signs, backfilling 3592.95 cubic yards of material, and obstructing 2 openings by blasting. A total of 18 new openings were included in the project and 11 of the original openings were deleted.

The most significant change involved the installation of culverts in place of the cable nets specified in the bid document. A majority of the adit portals consisted of rock that was fractured and unsupported. The vibration caused by the drilling required for rock bolt installation often jeopardized the operators safety by dislodging loose rock. In numerous cases a drill hole suitable for rock bolt installation could not be obtained therefore, culverts were installed in these portals instead.

Openings found during the course of construction were added to the project and others were deleted due to their natural collapse since the time of inventory. Other changes resulted from directives issued by new owners or lessees not originally contacted for reclamation consent.

The contractor completed the work as specified within the time allowed.

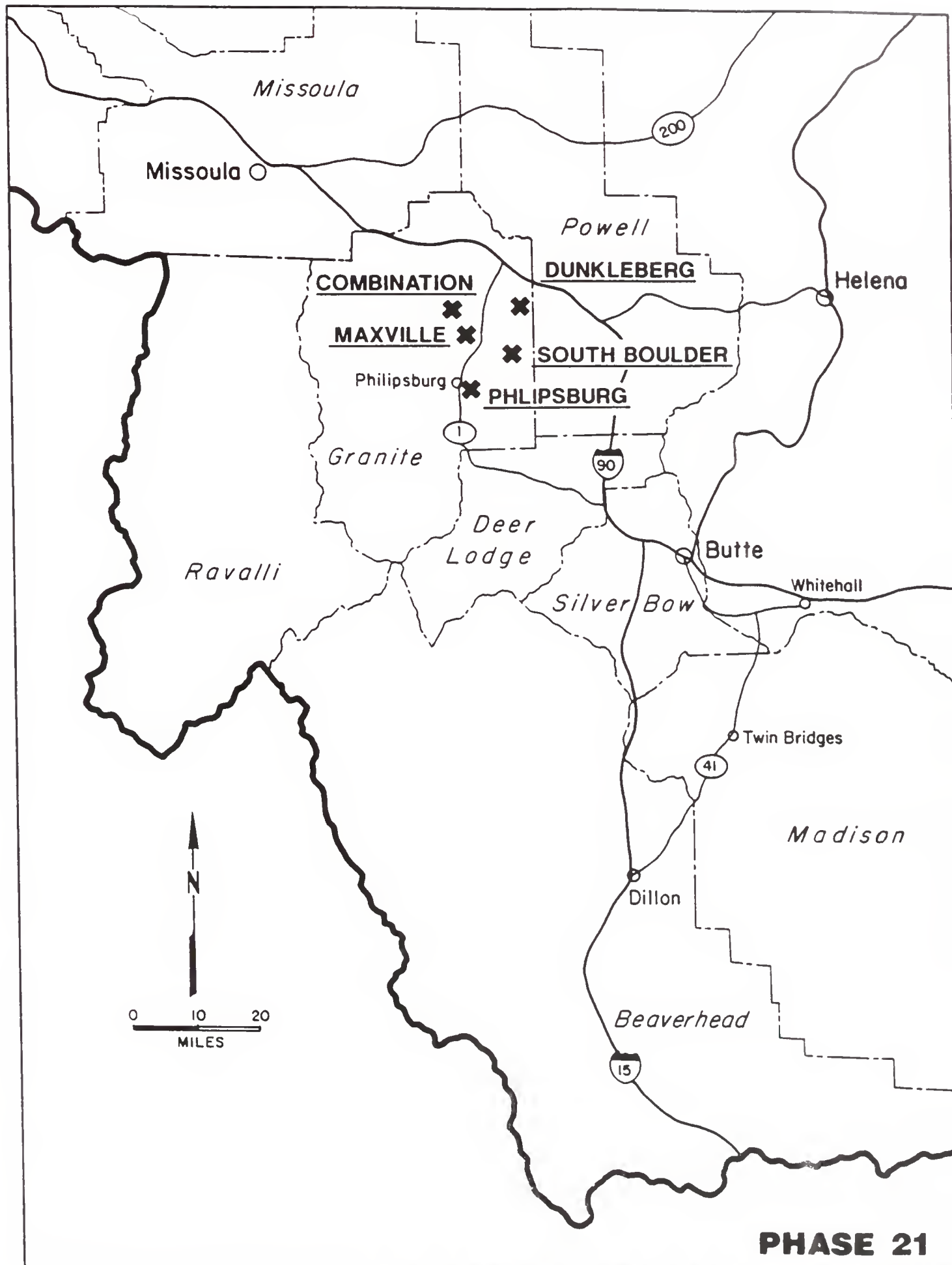
4.2 COMMENTS

The bulkhead closures installed may protect against unauthorized entry for many years. Periodic monitoring will be required to verify the condition of all mine openings included in the Phase 21 Project to assure against subsidence, vandalism and damage due to natural causes. Revegetation efforts should also be monitored for success.

5.0 SLIDES

Before, during, and post-construction slide photographs were taken of each opening. These slides and a slide log are contained in Appendix C.

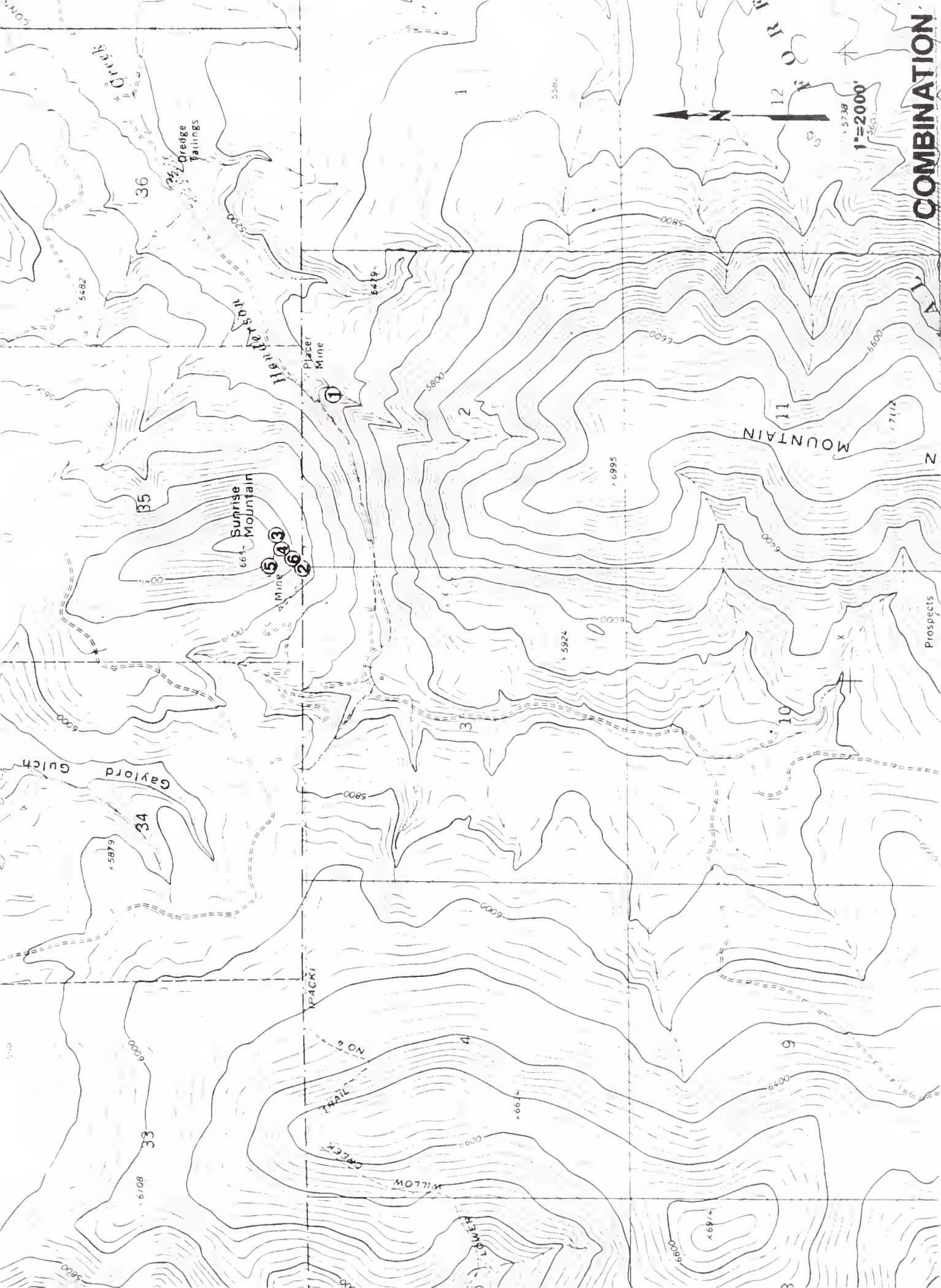
APPENDIX A
VICINITY AND SITE MAPS



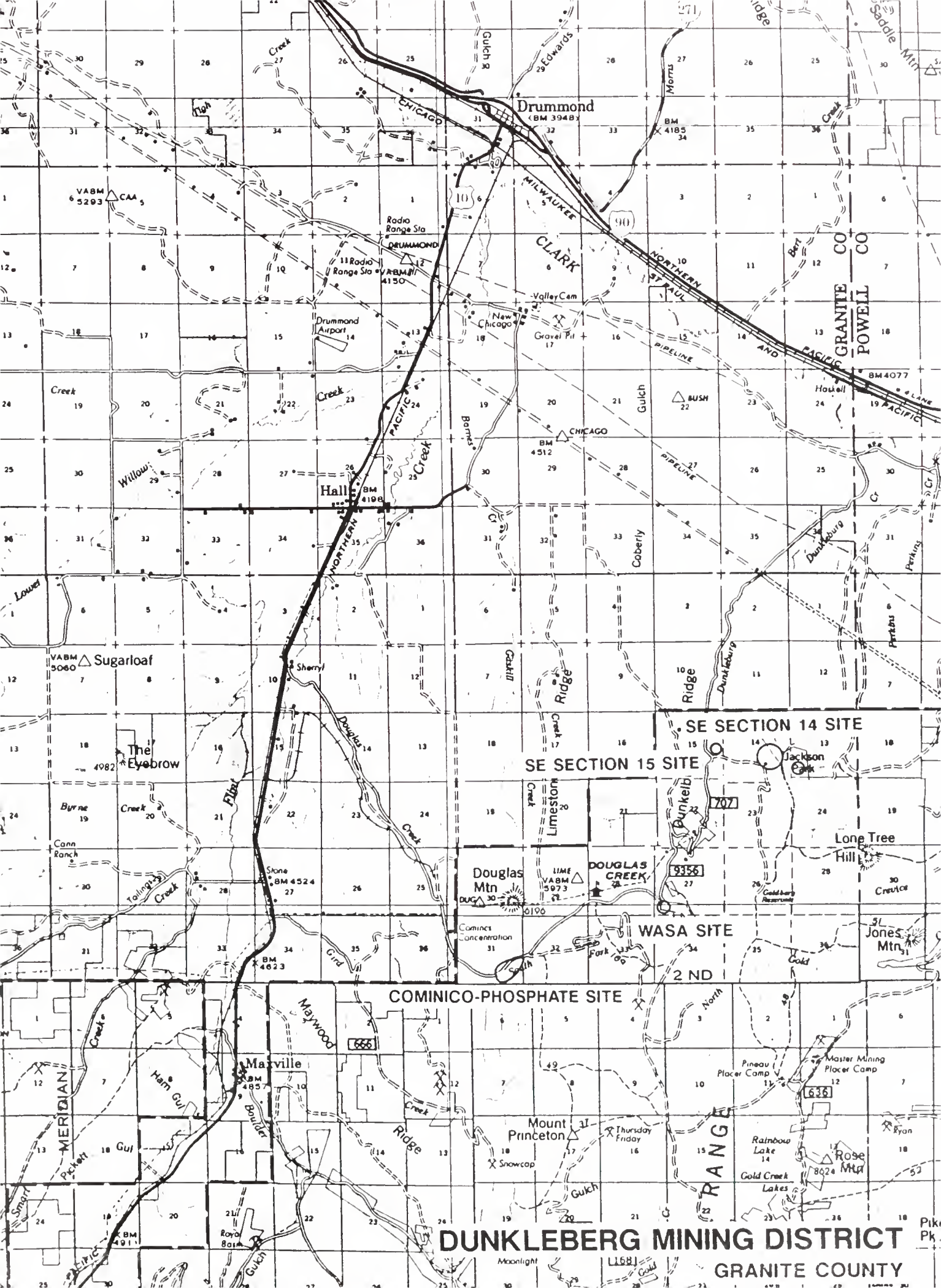
PHASE 21

HAZARDOUS MINE OPENING PROJECT





COMBINATION

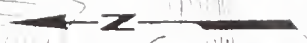


DUNKLEBERG MINING DISTRICT
GRANITE COUNTY



DUNKLEBERG

10
1"=2000'



Mine

Douglas Mountain
6258 x
Strip Mine
JEOP TRAIL

Douglas Creek

Middle Fork

Middle Fork

North Fork

South Fork

Mines

Creek

Gird Creek

Douglas Creek

South Fork

Mines

Creek

Gird Creek

Mines

Creek

Gird Creek

Douglas Creek

South Fork

Mines

Creek

Gird Creek

Mines

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South Fork

Mines

Creek

Gird Creek

Mines

Creek

Gird Creek

Douglas Creek

South Fork

Mines

Creek

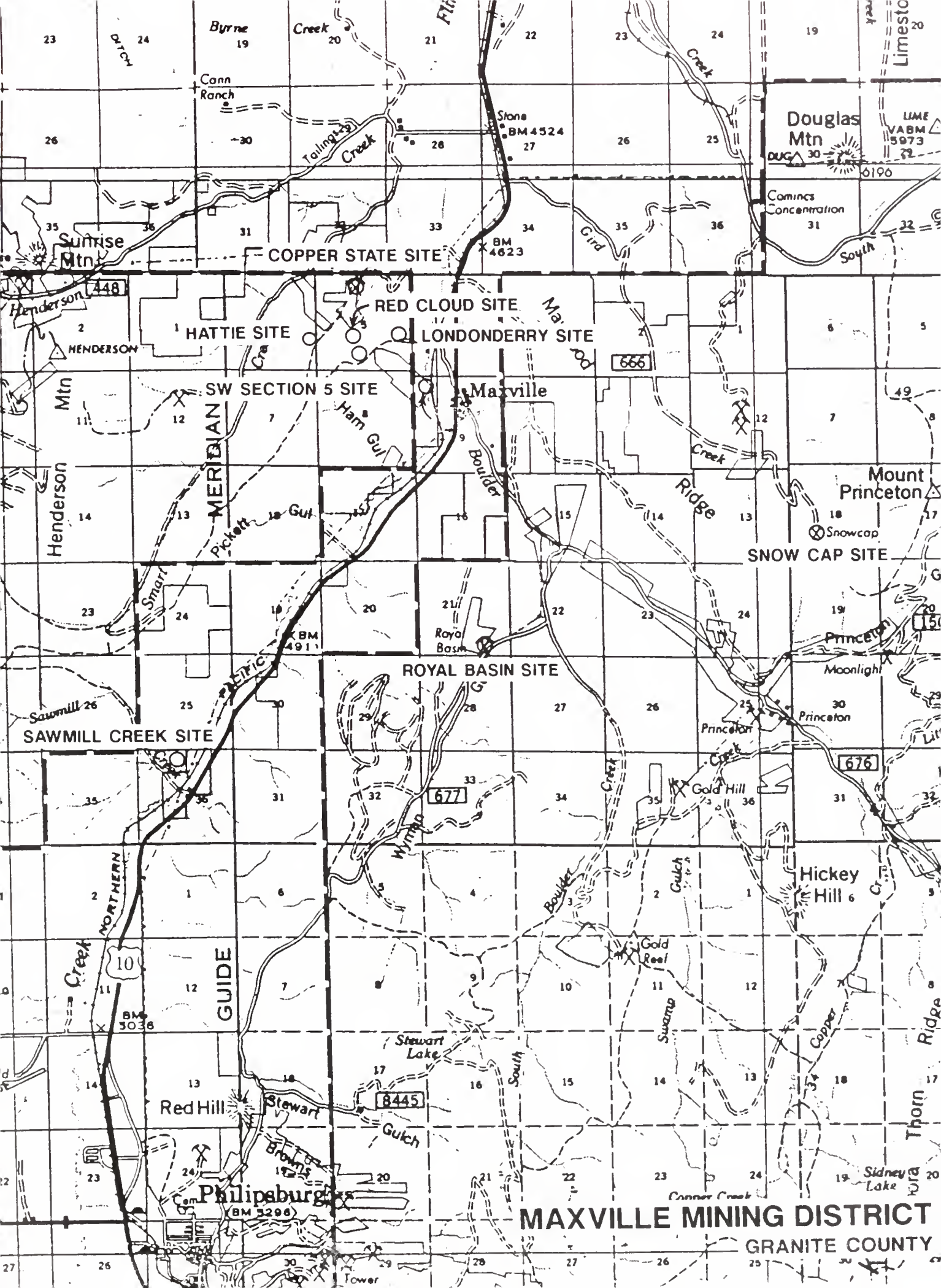
Gird Creek

Mines

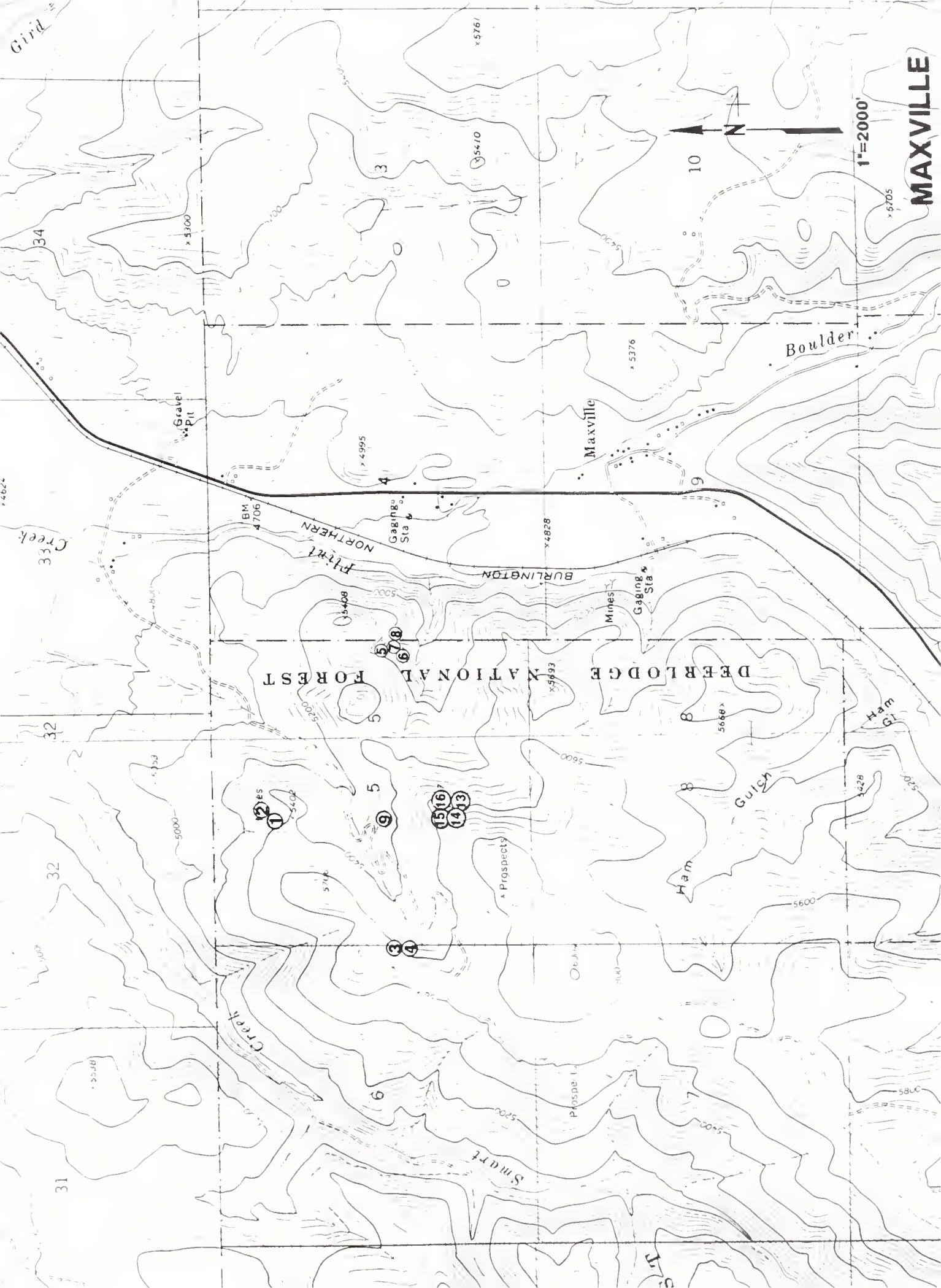
Creek

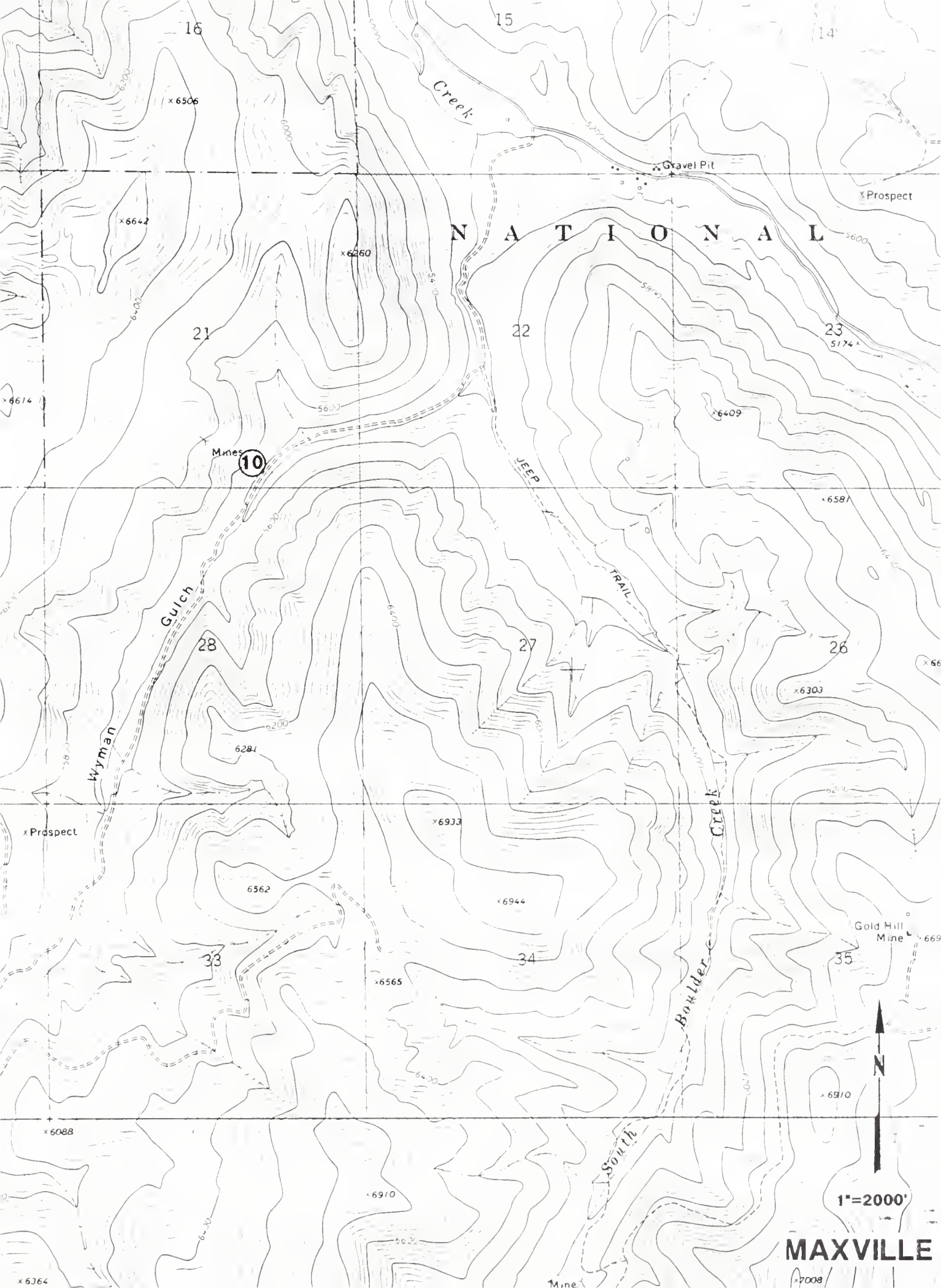
Gird Creek

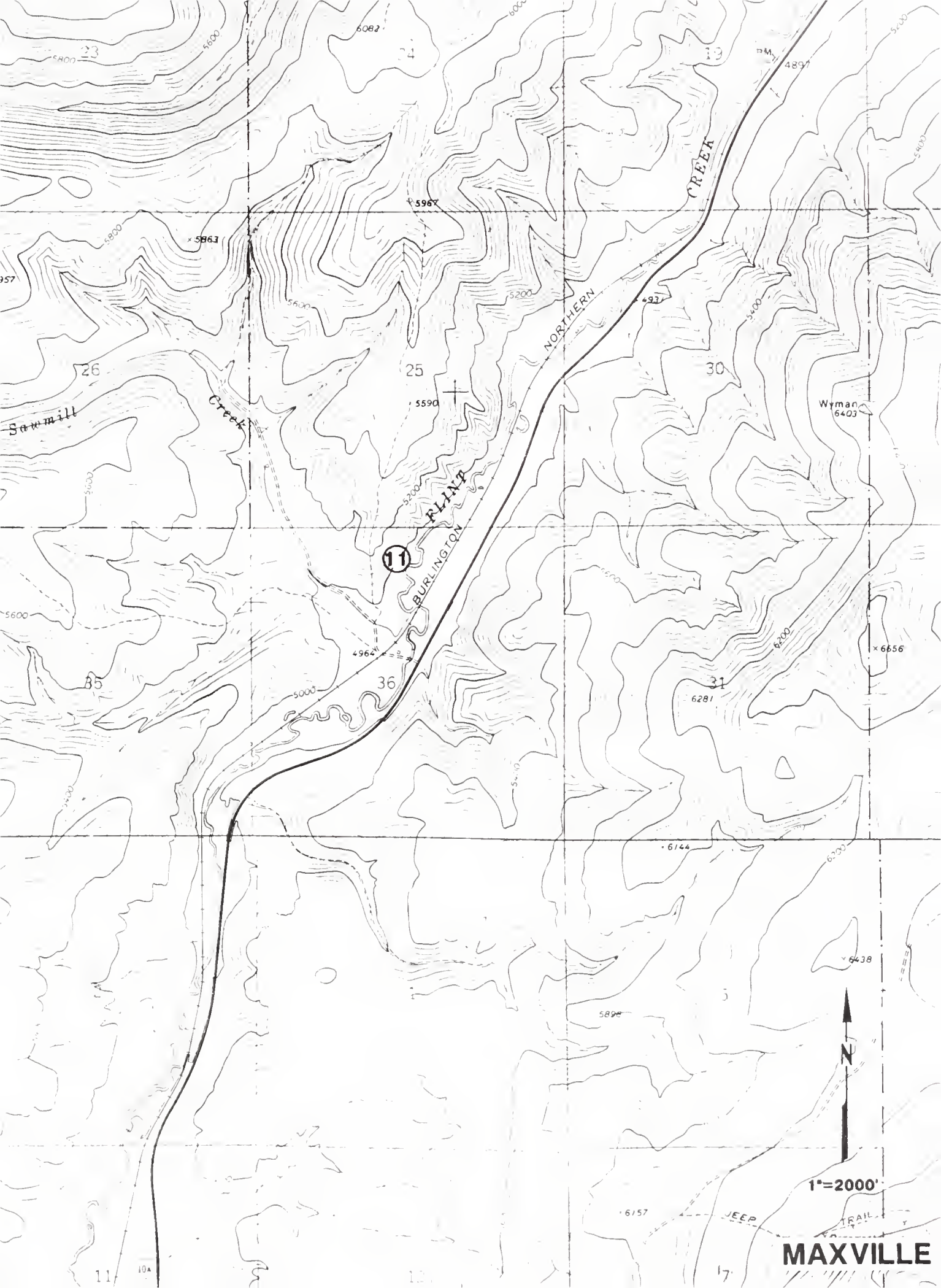




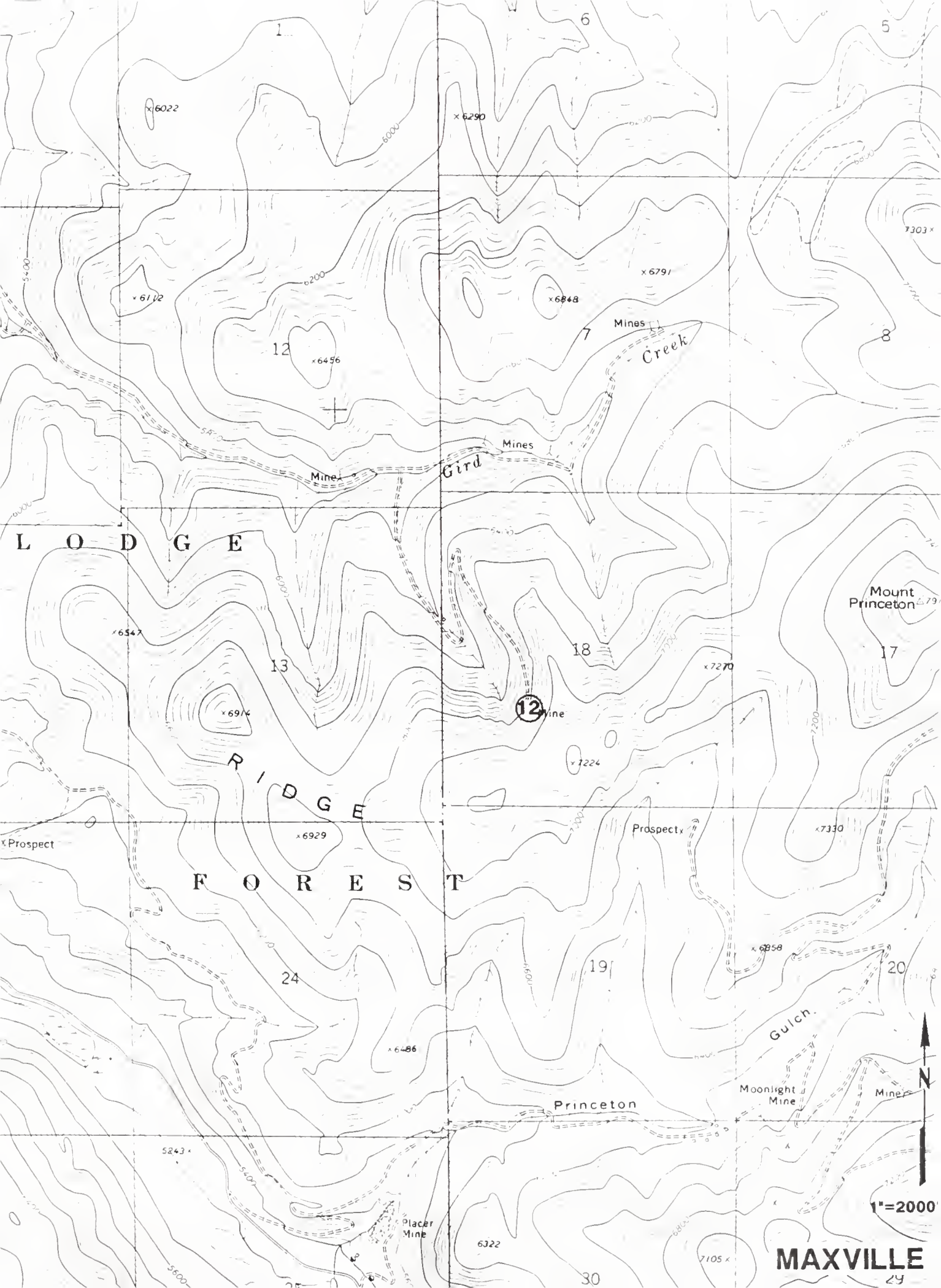
MAXVILLE MINING DISTRICT
GRANITE COUNTY







MAXVILLE



LODGE

RIDGE

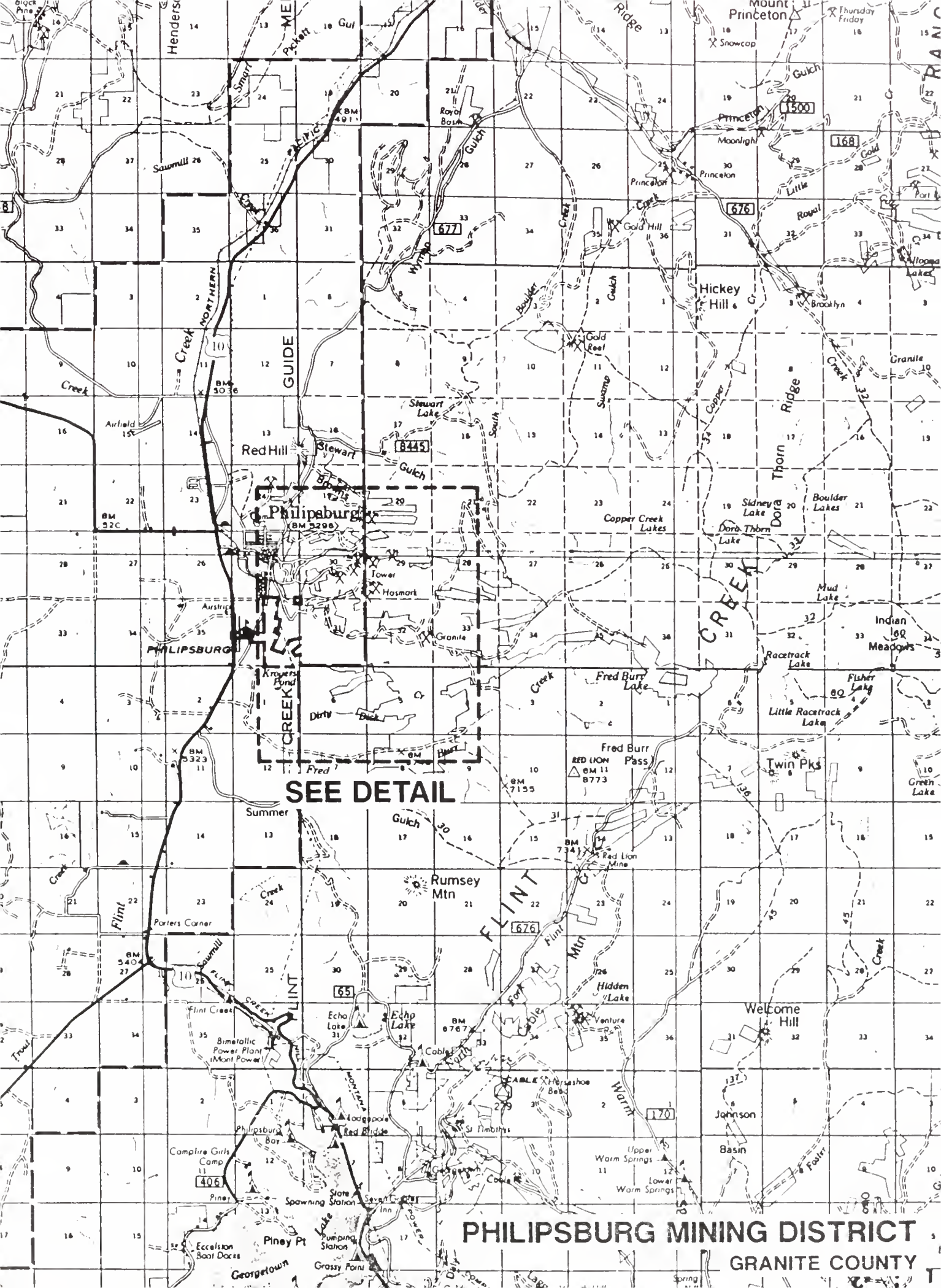
FOREST

Princeton

MAXVILLE

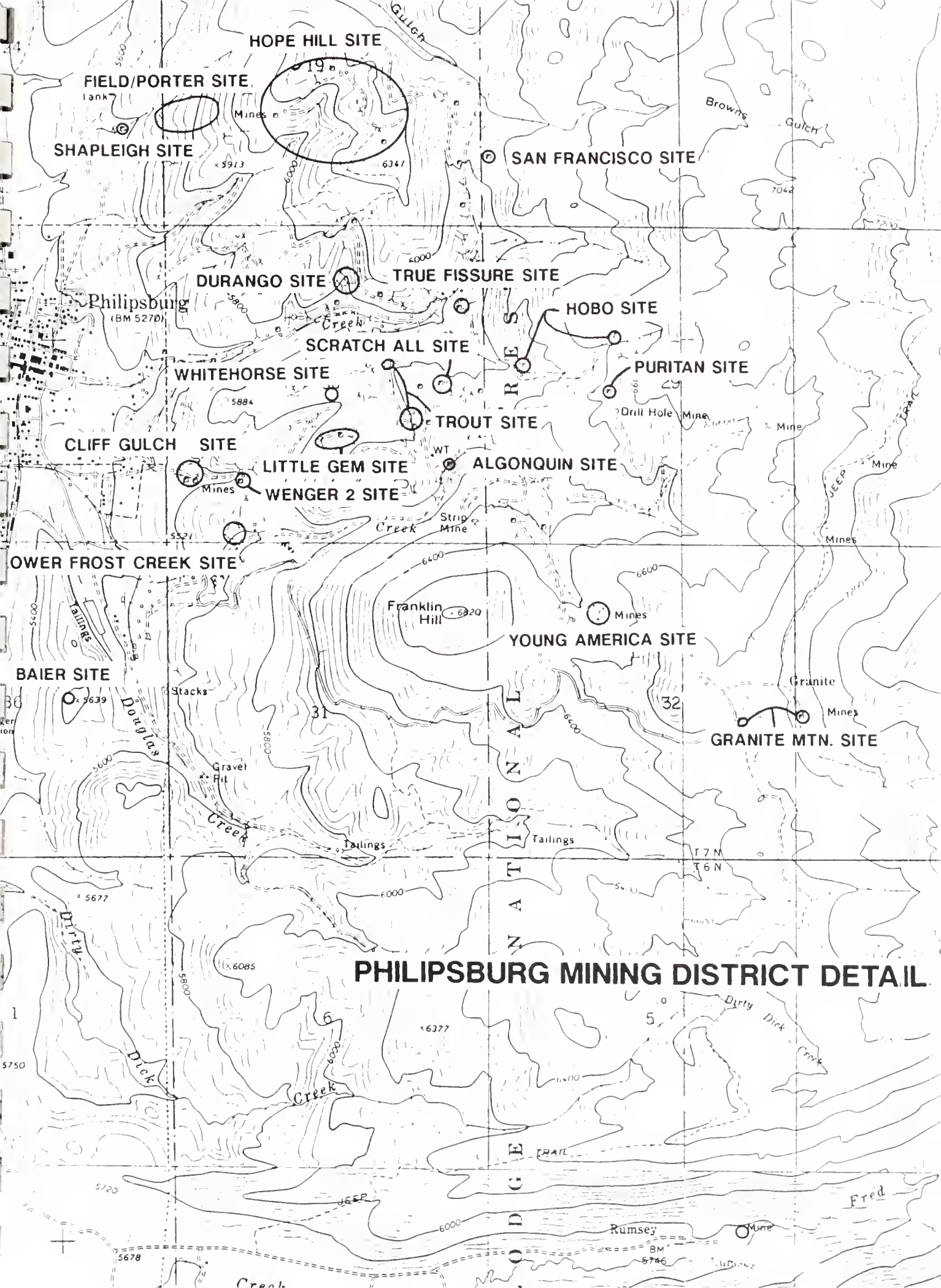
1"=2000'





SEE DETAIL

PHILIPSBURG MINING DISTRICT
GRANITE COUNTY

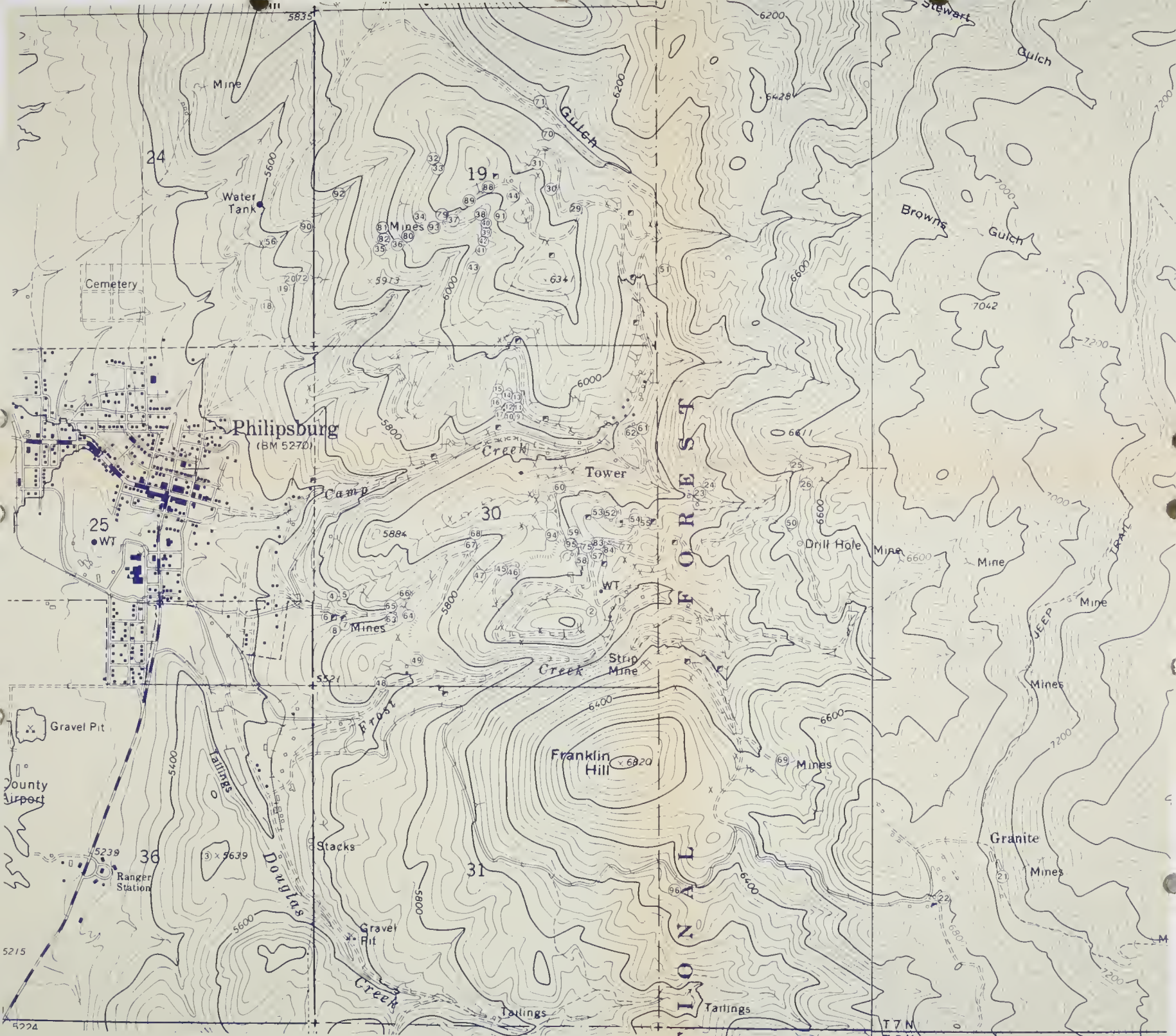




PHILIPSBURG MINING DISTRICT

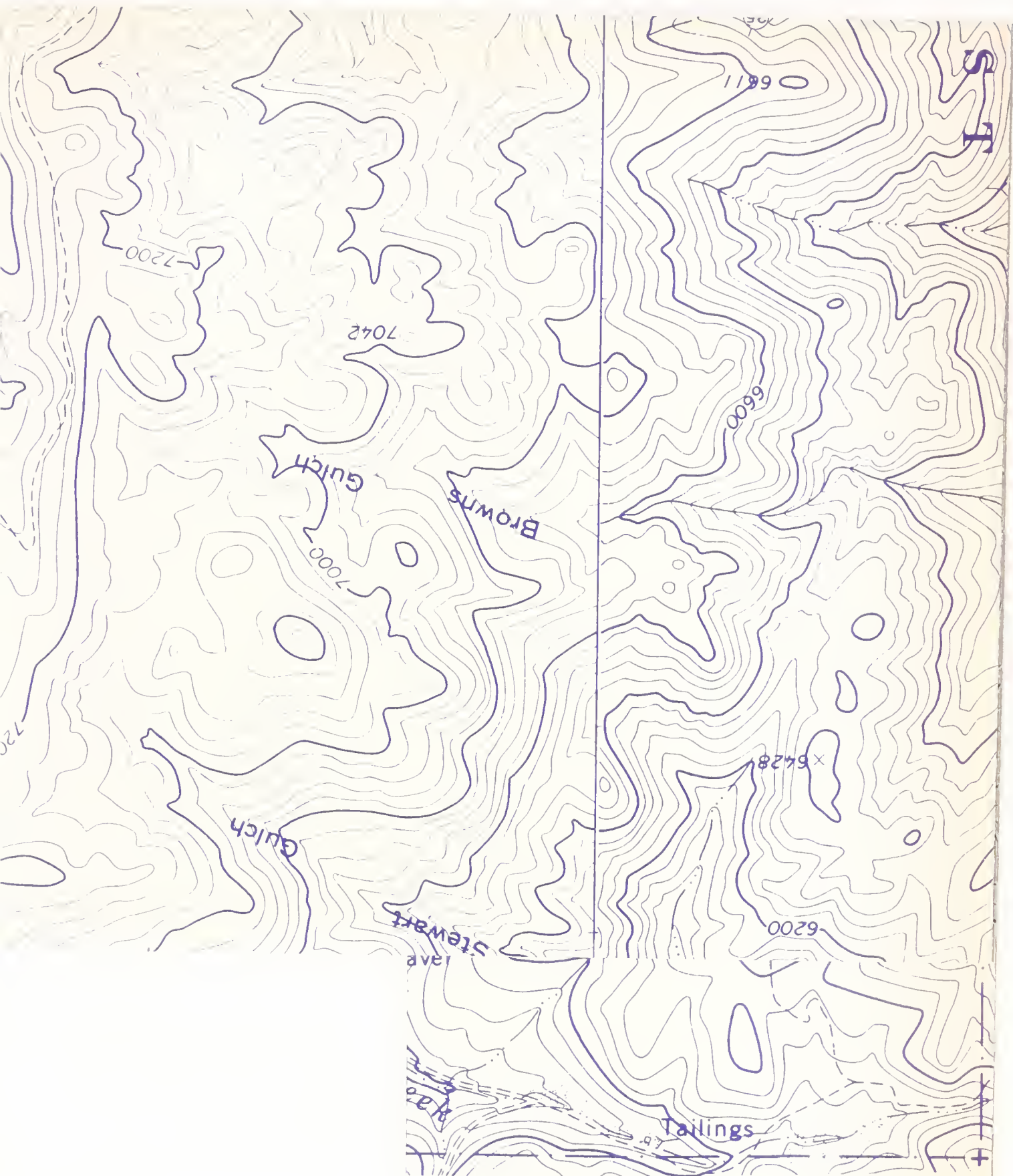
(1-71)

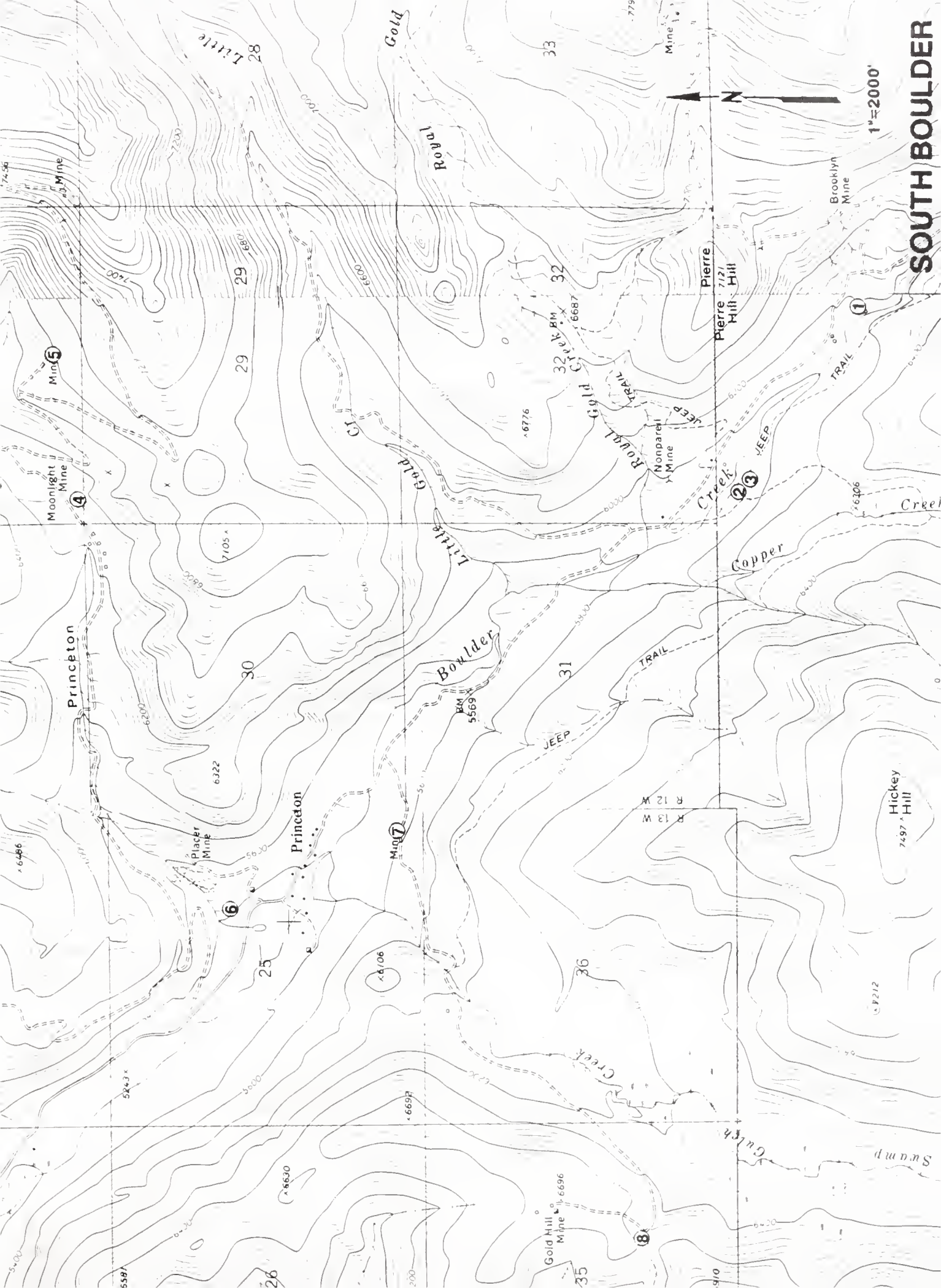
1"=1000'



(1-71) PHILIPSBURG MINING DISTRICT

1"=1000'





SOUTH BOULDER

1"=2000'



Hickey Hill
7497'

7422'

Swamp

Creek

Copper

Pierre Hill
7121'

R 12 W
R 13 W

Creek

Gold Hill Mine
6696'

Boulder

Little Gold

Gold

Robt

Princeton

Princeton

Moonlight Mine

Mine

Brooklyn Mine

Mine

32 R.B.M.
6687'

6776'

31

36

35

32

33

29

29

29

30

25

26

28

Little

Placer Mine

6630'

6587'

6322'

7105'

6840'

7200'

7450'

7799'

7910'

5843 x

6486'

6200'

6000'

5800'

5600'

5400'

5200'

5000'

4800'

4600'

4400'

4200'

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3800'

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-40000'

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-40400'

-40600'

-40800'

-41000'

-41200'

-41400'

-41600'

-41800'

-42000'

-42200'

-42400'

-42600'

-42800'

-43000'

-43200'

-43400'

-43600'

-43800'

-44000'

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-45800'

-46000'

-46200'

-46400'

APPENDIX B

FINAL PAY REQUEST, WORK DIRECTIVES AND CHANGE ORDERS

AFFIDAVIT ON BEHALF OF CONTRACTOR

STATE OF MONTANA
COUNTY OF LEWIS AND CLARK
DATE: September 18, 1989

MONT A/E 88-46-101

I certify to the best of my knowledge and belief that all work has been performed and materials supplied in strict conformance with the terms and conditions of the corresponding contract documents between Department of State Lands, the Owner, and Scott Construction, Inc., the Contractor, dated August 4, 1988, for the Hazardous Mine Opening Project, Phase 21, Granite
(Project)

County, Montana, and further declare that all bills for materials, supplies, utilities, and for all other things furnished or caused to be furnished by the above-named Contractor and used in the execution of the above Contract have been fully paid, and there are no unpaid claims or demands of state agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of work done or ordered to be done by said Contractor under the above-identified Contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations and liabilities arising by virtue of said Contract and authorized changes between the parties hereto, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to said Contract, and authorized changes.

This statement is made for the purpose of inducing the Owner to make Final Payment under the terms of the Contract, relying on the truth and statements contained therein.

Dated this 21 day of September 1989, at Helena, Montana.

CONTRACTOR:

Scott Construction, Inc.

BY:

Patricia Scott Pres

Subscribed and sworn to before me this 21 day of Sept, 1989.

Janet Engstrom
Notary Public for the State of Montana

(SEAL)

Residing at

East Helena

My commission expires

10-1-90

PAY REQUEST NO. 4
(FINAL PAY REQUEST)

FROM: March 21, 1989

TO: September 8, 1989

PROJECT NAME: Hazardous Mine Opening Project - Phase 21

LOCATION: Granite County, Montana

PROJECT NO.: Mont A/E 88-46-101

NAME OF CONTRACTOR: Scott Const.

ADDRESS: P.O. Box 777
East Helena, MT 59635

SUMMARY OR PROJECT STATUS

Amount of Original Contract	\$121,628.08
Amount of Approved Change Order(s)	32,512.29
TOTAL CONTRACT AMOUNT	\$154,140.37
Contract Time Used to Date	130 Days
Percentage of Contract Time Used	97%
Percentage of Contract Amount Earned	100%

Original Contract Amount Completed	\$121,628.08
Change Order and Work Directive(s) Amount Completed	32,512.29
Amount for Materials on Site	-0-
TOTAL To Date	154,140.37
Times 90% =	138,726.33
TOTAL AMOUNT Earned To Date	138,726.33
Less Previous Amount Earned	65,545.63
Plus amount underpaid on pay request No. 3	14.65
Plus Retainage for Contract Items 100% Complete	12,164.04
Amount Payable This Period	85,359.39
Less 1% Gross Receipts Tax	853.59

TOTAL DUE CONTRACTOR THIS PERIOD \$ 84,505.80

Requested By: Scott Const.

Pat Scott
(Contractor)

Date: 9-11-89

Checked By: Chen-Northern, Inc.

Jeremiah B. Bowser
(Engineer)

Date: 9/12/89

Approved By: Department of State Lands
Abandoned Mine Reclamation Bureau

Fanny Mantell
(Owner)

Date: 10/2/89

PAY REQUEST NO. 4

APPROVED PROJECT CHANGES

NORTHERN ENGINEERING AND TESTING, INC.

PROJECT: Hazardous Mine Opening Project
Phase 21

MONT A/E 88-46-101

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BIO PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK
1	Mobilization	1.0 LS	7,500.00	-0-	1.0	7,500.00
2	Backfilling Mine Openings	3992 CY	3.99	2148.45	3592.95	14,335.87
3	Adit and Shaft Culverts	14 EA	1,575.00	30	30	47,250.00
4	Cable Net Mine Closure	20 EA	750.00	9	9	6,750.00
5	Steel Gate Systems	12 EA	2,500.00	5	14	35,000.00
6	Masonry Adit Doors	10 EA	1,000.00	5	5	5,000.00
7	Steel Gate Adit Doors	5 EA	2,000.00	1	6	12,000.00
8	Attaching Owner-Provided Signs	27 EA	50.00	41	41	2050.00
9	Farm Fence	106 rods	50.00	297.09	339.09	16,954.50
10	Miscellaneous Site Work	1.0 LS	4,500.00	1.0	1.0	4,500.00
10a	Other Site Work*	N/A	N/A	2800.00	2800.00	2,800.00
TOTAL						<u>\$154,140.37</u>

* Other site work includes costs for blasting mine openings and installing timber sets.

PAY REQUEST NO. 4

APPROVED CHANGE ORDERS CHEN-NORTHERN, INC.

PROJECT: Hazardous Mine Opening Project
Phase 21

MONT A/E 88-46-101

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED CHANGE ORDER QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK
1	Mobilization					
2	Backfilling Mine Openings		3.99			
	Change Order No. 1	<250>		-0-	<250>	< 997.50>
	Change Order No. 2	<57.7>		-0-	< 57.7>	< 230.22>
	Change Order No. 3	<5>		-0-	< 5>	< 19.95>
	Change Order No. 4	<21>		<21>	< 21>	< 83.79>
	Change Order No. 5	<86>		<86>	< 86>	< 343.14>
	Change Order No. 7	20.65		20.65	20.65	82.39
3	Adit and Shaft Culverts		1575.00			
	Change Order No. 2	6		6	6	9,450.00
	Change Order No. 3	3		3	3	4,725.00
	Change Order No. 4	4		4	4	6,300.00
	Change Order No. 5	1		1	1	1,575.00
	Change Order No. 6	2		2	2	3,150.00
4	Cable Net Mine Closures		750.00			
	Change Order No. 2	<2>		-0-	<2>	<1,500.00>
	Change Order No. 3	<4>		<4>	<4>	<3,000.00>
	Change Order No. 4	<3>		<3>	<3>	<2,250.00>
	Change Order No. 5	<1>		<1>	<1>	< 750.00>
	Change Order No. 6	<2>		<2>	<2>	<1,500.00>
	Change Order No. 7	1		1	1	750.00

PAY REQUEST NO. 4

APPROVED CHANGE ORDERS (Cont.) CHEN-NORTHERN, INC.

PROJECT: Hazardous Mine Opening Project
Phase 21

MONT A/E 88-46-101

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED CHANGE ORDER QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK
5	Steel Gate Systems		2500.00			
	Change Order No. 1	1		-0-	1	2,500.00
	Change Order No. 2	1		-0-	1	2,500.00
	Change Order No. 3	2		2	2	5,000.00
	Change Order No. 5	1		1	1	2,500.00
	Change Order No. 7	<3>		<3>	<3>	<7,500.00>
6	Masonry Adit Doors		1000.00			
	Change Order No. 1	<1>		-0-	<1>	<1,000.00>
	Change Order No. 4	<1>		<1>	1	<1,000.00>
	Change Order No. 5	<2>		<2>	<2>	<2,000.00>
	Change Order No. 6	<1>		<1>	<1>	<1,000.00>
7	Steel Gate Systems		2000.00			
	Change Order No. 6	1		1	1	2000.00
8	Attaching Owner-Provided Signs		50.00			
	Change Order No. 1	16		16	16	800.00
	Change Order No. 2	11		11	11	550.00
	Change Order No. 3	4		4	4	200.00
	Change Order No. 5	2		2	2	100.00
	Change Order No. 6	2		2	2	100.00
	Change Order No. 7	<21>		<21>	<21>	<1,050.00>
9	Farm Fence		50.00			
	Change Order No. 1	27		-0-	27	1,350.00
	Change Order No. 2	92.2		-0-	92.2	4,610.00
	Change Order No. 3	42		42	42	2,100.00
	Change Order No. 5	24.39		24.39	24.39	1,219.50
	Change Order No. 6	10.24		10.24	10.24	512.00
	Change Order No. 7	37.26		37.26	37.26	1,863.00
10a	Miscellaneous Site Work					
	Change Order No. 1	2050.00	N/A	2050.00	2050.00	2,050.00
	Change Order No. 5	750.00	N/A	750.00	750.00	750.00

TOTAL CHANGE ORDERS

32,512.29

SECTION II

2.12 CHANGE ORDER

Order No. 1

Date: March 23, 1989

Agreement Date: August 4, 1988

NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21

Mont A/E 88-46-101

OWNER: Montana Department of State Lands

CONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
5	Work Directive No. 1 Steel Gate System (Add 1)					2500.00	2500.00
8	Work Directive No. 2 Hazard Signs (Add 4)					50.00	200.00
9	Farm Fence (Add 9 rods)					50.00	450.00
2	Work Directive No. 3 Backfill mine openings (Delete 250 cy)					3.99	<997.50>
8	Hazard Signs (Add 12)					50.00	600.00
9	Farm Fence (Add 18 rods)					50.00	900.00
7	Work Directive No. 4 Steel Gate Adit Door (Delete 1)					1	<1000.00>
N/A	Blast Mine Opening (1)					L/S	900.00
N/A	Install Timber Sets (4)					L/S	1150.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	<u>\$ 4,702.50</u>
OVERHEAD & PROFIT @ <u>Included</u> %	<u>-0-</u>
GRAND TOTAL - THIS CHANGE ORDER	<u>\$ 4,702.50</u>

Original Contract Price	<u>\$121,628.08</u>
Current Contract Price Adjusted by Previous Order	<u>-0-</u>
Cost This Change Order (+ or -)	<u>\$ 4,702.50</u>
New Contract Price Including This Change Order	<u>\$126,330.58</u>

SECTION II

The completion date as set forth in the Contract Documents shall be increased by (1) one calendar days.

The date for completion of all work will be August 25, 1989.

Description and Justification for Change:

1. Install a 24'x 24' grate at Philipsburg District Scratch All #77, additional opening. This grate eliminates a hazard previously overlooked. See Work Directive #1 dated 10-10-88.
2. Fence an additional opening at Philipsburg District, San Francisco Site. This reclamation eliminates a hazard previously overlooked. See Work Directive #2 dated 11-10-88.
3. Change Philipsburg, Durango backfill sites #11, 12, and 16 to fence per land owners request. See Work Directive #3 dated 11-10-88.
4. Install timber sets at Dunkleberg, Cominco Phosphate sites #1, 3, 4, and 5; Delete adit gate and add blast at Cominco Phosphate No. 2. Work Directive #4, dated 2-23-89.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by (\$ _____) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by (\$ _____) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

SURETY

By: _____
(Seal)

Recommended by: _____, Engineer

Accepted by: _____, Contractor

Approved by: _____, Owner

2.12 CHANGE ORDER

Order No. 2

Date: July 23, 1989

Agreement Date: August 4, 1988

NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21
Mont A/E 88-46-101

OWNER: Montana Department of State Lands

CONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
	The following are for sites in the Hope Hill area						
2	Delete 57.7 cy of backfill					3.99	(230.22)
3	Add 6 culverts					1575.00	9450.00
4	Delete 2 cable nets					750.00	(1500.00)
5	Add 1 10' x 10' grate					2500.00	2500.00
8	Add 11 signs					50.00	550.00
9	Add 92.2 rods of fence					50.00	4610.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	<u>\$ 15,379.78</u>
OVERHEAD & PROFIT @ <u>Included</u> %	<u>-0-</u>
GRAND TOTAL - THIS CHANGE ORDER	<u>\$ 15,379.78</u>

Original Contract Price	<u>\$126,330.58</u>
Current Contract Price Adjusted by Previous Order	<u>-0-</u>
Cost This Change Order (+ or -)	<u>\$ 15,379.78</u>
New Contract Price Including This Change Order	<u>\$141,710.36</u>

The completion date as set forth in the Contract Documents shall be increased by 14 (fourteen) calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

This change order is to account for changes directed to be made under Work Directives No. 1, 2, 3 and 4.

The following changes are for the Hope Hill Area:

1. Substitute culverts for backfill at sites No. 29, 34 and 42 and substitute 6.2 rods of fence for backfill at site No. 31. These changes due to landowner's request that no mine openings be backfilled.
2. Delete a cable net for site No. 70 and backfill for site No. 71. Landowner requested that these mine openings not be secured.
3. Substitute 47 rods of fence for a cable net at site No. 43. This change made due to field conditions.
4. Install culverts at sites No. 79, 81 and 82; fence sites No. 80, 88 and 89 with 12.0, 6.0 and 21.0 rods respectively; and install a 10 x 10 grate at site No. 91. These are additional hazardous sites that were previously overlooked.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by (\$ _____) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by (\$ _____) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

SURETY

By: _____
(Seal)

Recommended by: _____, Engineer

Accepted by: _____, Contractor

Approved by: _____, Owner

2.12 CHANGE ORDER

BOND NO. TPI 1351782

Order No. 3Date: July 31, 1989Agreement Date: August 4, 1988NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21
Mont A/E 88-46-101OWNER: Montana Department of State LandsCONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
	The following changes are for sites in the Trout Area						
3	Add 1 shaft culvert					1575.00	1575.00
5	Add 2-16' x 16'					2500.00	5000.00
8	Add 4 signs					50.00	200.00
9	Add 26 rods of fence					50.00	1300.00
	The following changes are for sites in the Durango area						
2	Delete 5 CY of backfill					3.99	(19.95)
3	Add 2 culverts					1575.00	3150.00
4	Delete 4 cable nets					750.00	(3000.00)
9	Add 16 rods of fence					50.00	800.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS

\$ 9,005.05

OVERHEAD & PROFIT @ Included %

-0-

GRAND TOTAL - THIS CHANGE ORDER

\$ 9,005.05

Original Contract Price

\$121,628.08

Current Contract Price Adjusted by Previous Order

\$ 20,082.28

Cost This Change Order (+ or -)

+ \$ ~~9,905.05~~ 9,005.05

New Contract Price Including This Change Order

\$150,715.41

The completion date as set forth in the Contract Documents shall be increased by 0 calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

The following changes are for sites in the Trout Area:

1. Install 2 - 16 x 16 foot grates at sites No. 83 and 84. These sites are recently found hazardous shafts. The owner requests no backfill.
2. Enclose stope No. 75 within 17.5 rods of fence and install two signs and enclose shaft No. 94 with 8.5 rods of fence and install two signs. These sites are recently found hazards.
3. Install a shaft culvert at No. 95. This is a recently found hazard.

The following changes are for sites in the Durango Area:

1. Delete cable net sites No. 9 and 10 and backfill site No. 13 (5 CY) Enclose these sites within the fencing requested in Work Directive #3 by installing an additional 16 rods of fence. This change made due to poor rock quality at sites No. 9 and 10 and the Owner's request that site No. 13 not be backfilled.
2. Substitute culverts for cable nets at sites No. 14A and 14B. This change made due to poor rock quality.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by Nine Thousand Five Dollars and 05/100----- (\$ 9,005.05) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by Nine Thousand Dollars and 05/100----- (\$ 9,005.05) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

Sally Anderson
P.O. Box 6169
Helena MT

SURETY

Transamerica Premier Insurance Company

By:

(Seal)
Thomas Sauer, Attorney-in-fact

Recommended by: Jeremiah B. Bowser, Engineer

Accepted by: Patricia Scott, Pres, Contractor

Approved by: Larry Marshall, Owner

2.12 CHANGE ORDER

BOND NO. TPI 1351782

Order No. 4Date: August 14, 1989

Agreement Date: _____

NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21
Mont A/E 88-46-101OWNER: Montana Department of State LandsCONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
2	Delete 21 CY of backfill					3.99	(83.79)
3	Add 4 culverts					1575.00	6300.00
4	Delete 1 cable nets					750.00	(2250.00)
6	Delete 1 masonry adit door					1000.00	(1000.00)

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	\$ 2,966.21
OVERHEAD & PROFIT @ <u>Included</u> %	-0-
GRAND TOTAL - THIS CHANGE ORDER	\$ 2,966.21

Original Contract Price	\$121,628.08
Current Contract Price Adjusted by Previous Order	\$ 29,087.33
Cost This Change Order (+ or -)	+ \$ 2,966.21
New Contract Price Including This Change Order	\$153,681.62

The completion date as set forth in the Contract Documents shall be increased by 0 calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

The following changes are for sites in the Trout Area:

1. At Combination District, Bunker Hill No. 1, substitute a culvert for a cable net. This change made due to poor rock quality for rock bolting.
2. At Dunkleberg District, SE Sec. 14, No. 12, delete 10 C.Y. of backfill. This opening has collapsed. At Wasa No. 15 substitute a culvert for 11 cubic yards of backfill. This change made due to the owners request that this opening not be backfilled. And at Cominco-Phosphate No. 6 delete 1 masonry adit door. This opening has collapsed.
3. At Maxville District, Copper State No. 1, substitute a culvert for a cable net. This change made due to poor rock quality for rock bolting. Delete Londonderry No. 8 because it has collapsed.
4. At South Boulder District, Brooklyn No. 1, substitute a culvert for a cable net. This change made due to poor rock quality for rock bolting.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by Two Thousand Nine Hundred Sixty-six Dollars and 21/100 (2,966.21) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by Two Thousand Nine Hundred Sixty-six Dollars and 21/100 (2,966.21) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

[Signature]
POBX 6169
[Signature]

SURETY

Transamerica Premier Insurance Company

By: [Signature]

Thomas Sauls, Attorney-in-fact

Recommended by: [Signature], Engineer

Accepted by: [Signature], Contractor

Approved by: [Signature], Owner

2.12 CHANGE ORDER

BOND NO. TPI 1351782

Order No. 5Date: August 28, 1989Agreement Date: August 4, 1988NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21Mont A/E 88-46-101OWNER: Montana Department of State LandsCONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
	The following changes are for sites in the Philipsburg District						
	1. Deletions						
2	Backfill (3 cy)					3.99	(11.97)
4	Cable net mine closure (1)					750.00	(750.00)
6	Masonry adit door (2)					1000.00	(2000.00)
8	Attach owner-provided signs (2)					50.00	(100.00)
9	Farm Fence (9 rods)					50.00	(450.00)
	2. Additions						
3	Adit culvert (1)					1575.00	1575.00
5	Steel grate system (1)					2500.99	2500.00
8	Attach owner-provided signs (2)					50.00	100.00
9	Farm fence (23.57 rods)					50.00	1178.50
	3. Baier No. 3						
2	Delete 55 CY of backfill					3.99	(219.45)
8	Add 2 owner provided signs					50.00	100.00
9	Add 9.82 rods of farm fence					50.99	491.00
	4. Cliff Gulch No. 5						
2	Delete 28 CY of backfill					3.99	(111.72)
N/A	Blast mine opening (1)				750.00		750.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS

\$ 3,051.36

OVERHEAD & PROFIT @ Included %

-0-

GRAND TOTAL - THIS CHANGE ORDER

\$ 3,051.36

Original Contract Price

\$121,628.08

Current Contract Price Adjusted by Previous Order

\$ 32,053.54

Cost This Change Order (+ or -)

+ \$ 3,051.36

New Contract Price Including This Change Order

\$156,732.98

The completion date as set forth in the Contract Documents shall be increased by 0 calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

The following changes are for sites in the Philipsburg District.

1. Delete the following closures; 3 cubic yards of backfill for Algonquin No. 2, 1- cable net for Hobo No. 24, 1- adit door for Young America No. 69, 1- adit door for Hobo No. 25, and 9 rods of fence and 4 signs for San Francisco No. 87. These openings have collapsed.
2. Add the following closures; 1-culvert for Shapleigh No. 92, 1-16 x 16 grate for Hope Hill No. 93, 11.21 rods of fence and 2-signs for West Central Granite No. 96, and 12.36 rods of fence and 2-signs for Shapleigh No. 90. These sites are recently found hazards.
3. At Baier No. 3 substitute 9.82 rods of fence and 2-signs for 55 cubic yards of backfill. The site owner requests the opening not be backfilled.
4. At Cliff Gulch No. 5 substitute blasting close the openings for 28 cubic yards of backfill. This site is inaccessible to heavy equipment.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by ~~Three Thousand Fifty-one Dollars and 36/100~~ (\$~~3,051.36~~) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by ~~Three Thousand Fifty-one and 36/100~~ (\$~~3,051.36~~) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

[Signature]
P.O. Box 6769
Helena MT

SURETY

~~Transamerica Premier Insurance Company~~

By: [Signature]
(Seal)

~~Thomas Sauer, Attorney-in-fact~~

Recommended by: Jeremiah B. Bowser, Engineer

Accepted by: Walter Scott, Pres, Contractor

Approved by: Sam Marshall, Owner

2.12 CHANGE ORDER

BOND NO. TP1 1351782

Order No. 6Date: August 28, 1989Agreement Date: August 4, 1988NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21Mont A/E 88-46-101OWNER: Montana Department of State LandsCONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
	The following substitutions are for sites in the Philipsburg District						
3	Add 2 culverts					1575.00	3150.00
4	Delete 2 cable nets					750.00	(1500.00)
6	Delete 1 masonry adit door					1000.00	(1000.00)
7	Add 1 steel gate door					2000.00	2000.00
8	Add 2 signs					50.00	100.00
9	Add 10.24 rods of fence					50.00	512.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	\$ 3,262.00
OVERHEAD & PROFIT @ <u>Included</u> %	-0-
GRAND TOTAL - THIS CHANGE ORDER	\$ 3,262.00

Original Contract Price	\$121,628.08
Current Contract Price Adjusted by Previous Order	\$ 35,104.90
Cost This Change Order (+ or -)	+ \$ 3,262.00
New Contract Price Including This Change Order	\$159,994.98

The completion date as set forth in the Contract Documents shall be increased by 0 calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

The following changes are for sites in the Philipsburg District.

1. At Hobo No. 23 substitute a steel adit gate for a masonry adit door. This change made due to wet field conditions limiting the use of brick and mortar construction.
2. At Scratch All No. 52, substitute 10.24 rods of fence and 2 signs for a steel plate/hatch. This change made to secure additional area around the shaft that may subside in the future.
3. Delete Scratch All No. 55 and include this opening within fencing for Scratch All No. 54. No quantity changes necessary.
4. At True Fissure No. 61 and Hobo No. 26 substitute culverts (2) for cable nets (2). These changes made due to poor rock quality resulting in hazardous conditions for rock bolting.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by ~~Three Thousand Two Hundred Sixty Two Dollars and no/100~~ (\$3,262.00) (100% of the change order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by ~~Three Thousand Two Hundred Sixty-two Dollars and no/100---~~ (\$3,262.00) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

Sally Menden
PO Box 6169
Helena MT

SURETY

Transamerica Premier Insurance Company

By: (Seal)

Thomas Sauer, Attorney-in-fact

Recommended by: Jeremiah B. Bowser, Engineer

Accepted by: Patti Kott, Pres, Contractor

Approved by: Larry Marshall, Owner

2.12 CHANGE ORDER

BOND NO. TPI 1351782

Order No. 7Date: September 5, 1989Agreement Date: August 4, 1988NAME OF PROJECT: Hazardous Mine Opening Project - Phase 21
Mont A/E 88-46-101OWNER: Montana Department of State LandsCONTRACTOR: Scott Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
2	Add 20.65 CY of backfill					3.99	82.39
4	Add 1 cable net					750.00	750.00
5	Delete 3 steel grates					2500.00	(7500.00)
8	Delete 21 signs					50.00	(1050.00)
9	Add 37.26 rods of fence					50.00	1863.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	\$ -5,854.61
OVERHEAD & PROFIT @ <u>Included</u> %	-0-
GRAND TOTAL - THIS CHANGE ORDER	\$ -5,854.61

Original Contract Price	\$121,628.08
Current Contract Price Adjusted by Previous Order	\$ 38,628.08
Cost This Change Order (+ or -)	+ \$ -5,854.61
New Contract Price Including This Change Order	\$154,140.37

The completion date as set forth in the Contract Documents shall be increased by 0 calendar days.

The date for completion of all work will be September 8, 1989.

Description and Justification for Change:

The following changes are for sites in the Philipsburg District.

1. The following changes are made to balance the total of the estimated plan quantity and change order quantities with the actual amount of each item completed.

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Quantity Completed</u>	<u>Change In Quantity</u>
2	Backfill (cy)	3572.30	3592.95	20.65
8	Signs (ea)	62	41	(21)
9	Fence (rods)	301.83	339.09	37.26

2. The following changes for item quantities are made to account for differences in the project bid package between the estimated plan quantity, as bid, and the actual number of mine openings originally specified for each type of closure.

<u>Item No.</u>	<u>Description</u>	<u>Est. Plan Quantity</u>	<u>Specified Quantity</u>	<u>Change In Quantity</u>
4	Cable Net (ea)	20	21	1
5	Steel Grates (ea)	12	9	(3)

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by ~~Five Thousand Eight Hundred Fifty-four and 61/100 (\$5,854.61)~~ decreased by ~~(\$5,854.61)~~ (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by ~~(\$5,854.61)~~ decreased by ~~(\$5,854.61)~~ (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

[Signature]
PRB 6/69
Nelena MT

SURETY

Transamerica Prudential Insurance Company
By: [Signature]
(Seal)

Recommended by: Jeremiah B. Bowser, Engineer

Accepted by: Rita Scott, Pres, Contractor

Approved by: Sam Marshall, Owner

SECTION II

2.11 WORK DIRECTIVE CHANGE

(Instructions on Reverse Side)

No. 1

PROJECT: Phase 21 Abandoned Mine Reclamation
OWNER: Department of State Lands
State of Montana
1625 11th Avenue
Helena, MT 59620
CONTRACTOR: Scott Construction
DATE OF ISSUANCE: 10-10-88
OWNER'S PROJECT NO. Mont. A/E 88-46-101
ENGINEER:
CONTRACT FOR: Reclamation of Hazardous Mine Openings
ENGINEER'S PROJECT NO. 88-3005.C

You are directed to proceed promptly with the following change(s):

Description: Install a 24' x 24' grate at Philipsburg District Scratch All #77, additional opening
Purpose of Work Directive Change: To eliminate a hazard previously overlooked at this site.
Attachments: (list documents supporting change)

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

☐ Time and materials

☒ Unit Price

☐ Cost plus fixed fee

☐ Other _____

Method of determining change in Contract Price:

☐ Contractor's records

☐ Engineer's records

☐ Other _____

Grate = \$2,500.00

Estimated increase (decrease) in Contract Price: \$ 2,500.00.
If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Time: \$ 1 day.
If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

RECOMMENDED BY:

Jeremiah B. Brouse
Engineer

AUTHORIZED BY:

S. McQuilly
Owner

ACCEPTED BY:

Pete Scott
Contractor

SECTION II

2.11 WORK DIRECTIVE CHANGE

(Instructions on Reverse Side)

No. 2

PROJECT: Phase 21 Abandoned Mine Reclamation
OWNER: Department of State Lands
State of Montana
1625 11th Avenue
Helena, MT 59620
CONTRACTOR: Scott Construction
DATE OF ISSUANCE: 11-10-88
OWNER'S PROJECT NO. Mont. A/E 88-46-101
ENGINEER: Northern Engineering
CONTRACT FOR: Reclamation of Hazardous Mine Openings
ENGINEER'S PROJECT NO. 88-3005.C

You are directed to proceed promptly with the following change(s):

Description: Fence an additional site located at San Francisco Mine

Purpose of Work Directive Change: Mitigation of hazardous opening

Attachments: (list documents supporting change)

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

☐ Time and materials Fence 9.0 rods
☒ Unit Price $\times 50.00$
 $\$450.00$
☐ Cost plus fixed fee $4 \times 50 = 200.00$
 $\$650.00$

☐ Other _____

Method of determining change in Contract Price:

☐ Contractor's records

☐ Engineer's records

☐ Other _____

Estimated increase (decrease) in Contract Price: \$ 650.00

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Time: \$ 1 day

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

RECOMMENDED BY: Jerome E. Brown
Engineer

AUTHORIZED BY: S. McNally
Owner

ACCEPTED BY: Pat Scott
Contractor

2.11 WORK DIRECTIVE CHANGE

No. 3

DATE OF ISSUANCE: 11-10-88

OWNER'S PROJECT NO. Mont. A/E 88-46-101

ENGINEER: Northern Engineering

ENGINEER'S PROJECT NO. 88-3005.C

Description: Change Durango backfill sites #11, 12 and 16 to fence

Purpose of Work Directive Change: Per landowner request (Bill Antonioli)

Attachments: (list documents supporting change)

Method of determining change in Contract Price:

[] Cost plus fixed fee (12×50.00) \$502.50

[] Other

Method of determining change in Contract Price:

[1] Contractor's records

[] Engineer's records

[1] Other _____

Estimated increase (decrease) in
Contract Price: \$ 502.50

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in
Contract Time: \$ 1 day

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

RECOMMENDED BY(

Engineer

AUTHORIZED BY:

Owner

ACCEPTED BY:

Contractor

SECTION II

2.11 WORK DIRECTIVE CHANGE

(Instructions on Reverse Side)

No. 4

PROJECT: Phase 21 Abandoned Mine Reclamation
OWNER: Department of State Lands
State of Montana
1625 11th Avenue
Helena, MT 59620
CONTRACTOR: Scott Construction
DATE OF ISSUANCE: 2-23-89
OWNER'S PROJECT NO. Mont. A/E 88-46-101
ENGINEER: Chen-Northern, Inc.
CONTRACT FOR: Reclamation of Hazardous Mine Openings
ENGINEER'S PROJECT NO. 88-3005.C

You are directed to proceed promptly with the following change(s):

Description: Install new timber sets at Cominco Phosphate #s 1,3,4 & 5, prior to installing gates. Delete adit gate at Cominco Phosphate #2 and add blast at Cominco Phosphate #2.

Purpose of Work Directive Change: Per landowner request (Marty Dippold)

Attachments: (list documents supporting change)

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

☐ Time and materials Timber Sets \$ 1150.00
☒ Unit Price Adit Gate <\$1000.00>
Blast 900.00
☐ Cost plus fixed fee \$ 1050.00

Method of determining change in Contract Price:

☐ Contractor's records
☐ Engineer's records
☐ Other _____

Estimated increase (decrease) in Contract Price: \$ 1050.00

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Time: \$ -0-

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

RECOMMENDED BY:

Jeremiah B. Brown
Engineer

AUTHORIZED BY:

Susan McAnally
Owner

ACCEPTED BY:

Patricia Scott, Pres
Contractor

APPENDIX C

SLIDES

APPENDIX C

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
1	7-87	Combination	Bunker Hill (1)	Before
2	8-22-89	Combination	Bunker Hill (1)	Culvert installed
3	7-87	Combination	Sunrise/Queen	Site overview
4	7-87	Combination	Sunrise/Queen (1)	Before
5	8-22-89	Combination	Sunrise/Queen (2)	Cable net installed
6	7-87	Combination	Sunrise/Queen (3)	Before
7	8-22-89	Combination	Sunrise/Queen (3)	Cable net installed
8	7-87	Combination	Sunrise/Queen (4)	Before
9	8-22-89	Combination	Sunrise/Queen (4)	Cable net installed
10	7-87	Combination	Sunrise/Queen (5)	Before
11	8-22-89	Combination	Sunrise/Queen (5)	Cable net installed
12	7-87	Combination	Sunrise/Queen (6)	Before
13	8-22-89	Combination	Sunrise/Queen (6)	Cable net installed
14	7-87	Dunkleberg	Cominco-Phosphate	Site Overview
15	7-87	Dunkleberg	Cominco-Phosphate (1,2)	Before
16	7-87	Dunkleberg	Cominco-Phosphate (1)	Before
17	2-24-89	Dunkleberg	Cominco-Phosphate (1)	Before installation adit gate
18	2-24-89	Dunkleberg	Cominco-Phosphate (1)	Installing lag bolts for attaching gate
19	2-24-89	Dunkleberg	Cominco-Phosphate (1)	After installation of adit gate
20	7-87	Dunkleberg	Cominco-Phosphate (2)	Before
21	7-87	Dunkleberg	Cominco-Phosphate (3)	Before
22	2-24-89	Dunkleberg	Cominco-Phosphate (3)	Before installation of adit gate
23	2-24-89	Dunkleberg	Cominco-Phosphate (3)	During installation of adit gate
24	2-24-89	Dunkleberg	Cominco-Phosphate (3)	After installation of adit gate
25	7-87	Dunkleberg	Cominco-Phosphate (4)	Before
26	2-25-89	Dunkleberg	Cominco-Phosphate (4)	Before installation of adit gate
27	2-25-89	Dunkleberg	Cominco-Phosphate (4)	After installation of adit gate
28	7-87	Dunkleberg	Cominco-Phosphate (5)	Before
29	2-25-89	Dunkleberg	Cominco-Phosphate (5)	Before installation of adit gate
30	2-25-89	Dunkleberg	Cominco-Phosphate (5)	During installation
31	2-25-89	Dunkleberg	Cominco-Phosphate (5)	After installation of adit gate
32	2-26-89	Dunkleberg	Cominco-Phosphate (7)	After installation of adit gate
33	5-27-83	Dunkleberg	SE Section 14 (8)	Before
34	7-20-89	Dunkleberg	SE Section 14 (8)	Before backfill
35	7-21-89	Dunkleberg	SE Section 14 (8)	Backfill in progress with D-7 dozer
36	7-21-89	Dunkleberg	SE Section 14 (8)	Backfill in progress
37	7-25-89	Dunkleberg	SE Section 14 (8)	Backfill completed and site revegetated
38	7-25-89	Dunkleberg	SE Section 14 (8)	Backfill completed and site revegetated
39	5-27-83	Dunkleberg	SE Section 14 (9)	Before
40	7-20-89	Dunkleberg	SE Section 14 (9)	Before backfill
41	7-25-89	Dunkleberg	SE Section 14 (9)	After backfill
42	7-20-89	Dunkleberg	SE Section 14 (10)	Before backfill
43	7-25-89	Dunkleberg	SE Section 14 (10)	After backfill

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
44	7-25-89	Dunkleberg	SE Section 14 (11)	After backfill
45	7-20-89	Dunkleberg	SE Section 14 (13)	Before backfill
46	8-04-89	Dunkleberg	SE Section 14 (13)	After backfill
47	7-20-89	Dunkleberg	SE Section 15 (14)	Before backfill
48	7-25-89	Dunkleberg	SE Section 15 (14)	Backfill near completion
49	8-04-89	Dunkleberg	SE Section 15 (14)	After backfill
50	7-87	Dunkleberg	Wasa (15)	Before
51	7-20-89	Dunkleberg	Wasa (15)	Before installation of culvert
52	7-87	Dunkleberg	Wasa (15)	Before
53	7-20-89	Dunkleberg	Wasa (15)	Culvert installation completed
54	7-87	Maxville	Copper State	Site Overview
55	7-87	Maxville	Copper State (1)	Before
56	6-89	Maxville	Copper State (1)	Before installation of culvert
57	6-89	Maxville	Copper State (1)	Culvert being installed with 931 Loader
58	6-89	Maxville	Copper State (1)	Culvert installed
59	6-89	Maxville	Copper State (2)	Before backfill
60	6-89	Maxville	Copper State (2)	D-7 Cat backfilling shaft
61	6-89	Maxville	Copper State (2)	Backfill completed
62	9-22-87	Maxville	Hattie (3)	Before
63	9-22-87	Maxville	Hattie (4)	Before
64	6-89	Maxville	Londonderry (6)	D-7 Cat backfilling opening
65	6-89	Maxville	Londonderry (6)	Backfill completed
66	6-89	Maxville	Red Cloud (9)	Before backfill
67	6-89	Maxville	Red Cloud (9)	D-7 Cat backfilling opening
68	6-89	Maxville	Red Cloud (9)	Backfill completed
69	6-87	Maxville	Royal Basin	Site Overview
70	6-87	Maxville	Royal Basin (10)	Before
71	6-87	Maxville	Royal Basin (10)	Before
72	6-89	Maxville	SW Section 5 (13)	Before backfill
73	6-89	Maxville	SW Section 5 (13)	D-7 Cat backfilling
74	6-89	Maxville	SW Section 5 (13)	Backfill completed
75	6-89	Maxville	SW Section 5 (15)	Before backfill
76	6-89	Maxville	SW Section 5 (15)	D-7 Cat backfilling
77	6-89	Maxville	SW Section 5 (15)	Backfill completed
78	9-23-87	Maxville	Sawmill Creek (11)	Before
79	9-87	Philipsburg	Algonquin (1)	Before
80	9-87	Philipsburg	Algonquin (1)	Before
81	11-7-88	Philipsburg	Algonquin (1)	Before, 40' northwest of opening
82	11-7-88	Philipsburg	Algonquin (1)	Before, 30' southeast of opening
83	11-7-88	Philipsburg	Algonquin (1)	During, 30' southeast of opening, hand digging post holes
84	11-7-88	Philipsburg	Algonquin (1)	During, 25' southeast of opening, pouring corner posts
85	9-89	Philipsburg	Algonquin (1)	After,
86	6-87	Philipsburg	Baier (3)	Before
87	6-87	Philipsburg	Baier (3)	Before
88	08-16-89	Philipsburg	Baier (3)	Fencing completed

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
89	7-89	Philipsburg	Cliff Gulch (4)	Before
90	7-87	Philipsburg	Cliff Gulch (4)	Before backfill
91	7-89	Philipsburg	Cliff Gulch (4)	D-7 Cat backfilling
92	7-89	Philipsburg	Cliff Gulch (4)	Backfill completed
93	7-87	Philipsburg	Cliff Gulch (5)	Before
94	7-87	Philipsburg	Cliff Gulch (5)	Before
95	7-87	Philipsburg	Cliff Gulch (5)	Before
96	7-89	Philipsburg	Cliff Gulch (6)	Backfill completed
97	7-87	Philipsburg	Cliff Gulch (7)	Before
98	7-89	Philipsburg	Cliff Gulch (7)	Before backfill
99	7-89	Philipsburg	Cliff Gulch (7)	D-7 Cat backfilling
100	7-89	Philipsburg	Cliff Gulch (7)	Backfill completed
101	7-87	Philipsburg	Cliff Gulch (8)	Before
102	7-89	Philipsburg	Cliff Gulch (8)	Before backfill
103	7-89	Philipsburg	Cliff Gulch (8)	D-7 Cat backfilling
104	7-89	Philipsburg	Cliff Gulch (8)	Backfill completed
105	7-87	Philipsburg	Durango (14)	Before
106	7-87	Philipsburg	Durango (14)	Before
107	11-1-88	Philipsburg	Durango (14B)	Before, 20' southeast of opening
108	7-6-89	Philipsburg	Durango (14A)	Before installation of culvert
109	7-6-89	Philipsburg	Durango (14A & B)	Culverts installed
110	7-87	Philipsburg	Durango (15)	Before
111	7-6-89	Philipsburg	Durango (15)	Before installation of cable net
112	8-16-89	Philipsburg	Durango (15)	Cable net installed
113	7-87	Philipsburg	Durango (16)	Before
114	7-87	Philipsburg	Durango (16)	Before
115	7-6-89	Philipsburg	Durango (16)	Fence corners placed
116	8-87	Philipsburg	Durango (17)	Before
117	7-6-89	Philipsburg	Durango (17)	Before installation of adit door
118	8-87	Philipsburg	Durango (17)	Before
119	7-6-89	Philipsburg	Durango (17)	Adit door installed
120	10-4-88	Philipsburg	Field/Porter (18)	Before, 15' east of opening
121	10-4-88	Philipsburg	Field/Porter (18)	Before, 5' southwest of opening
122	10-7-88	Philipsburg	Field/Porter (18)	During, 50' northeast of opening, assembling grate
123	10-7-88	Philipsburg	Field/Porter (18)	During, 15' southwest of opening, hand placing grate
124	10-21-88	Philipsburg	Field/Porter (18)	After, 15 east of opening
125	10-4-88	Philipsburg	Field/Porter (19)	Before, 10' east of opening
126	10-7-88	Philipsburg	Field/Porter (19)	Before
127	10-21-88	Philipsburg	Field/Porter (19)	During, 15' northeast of opening, hand digging pedestal holes
128	10-21-88	Philipsburg	Field/Porter (19)	During, 10' east of opening, hand placing pedestal concrete
129	8-89	Philipsburg	Field/Porter (19)	After installation of grate
130	10-4-88	Philipsburg	Field/Porter (20)	Before, 10' west of opening
131	10-4-88	Philipsburg	Field/Porter (20)	Before, 20' east of opening
132	10-6-88	Philipsburg	Field/Porter (20)	Before
133	10-6-88	Philipsburg	Field/Porter (20)	During, 20' west of opening, hand placing grate
134	10-6-88	Philipsburg	Field/Porter (20)	During, 10' west of opening, hand placing grate
135	10-21-88	Philipsburg	Field/Porter (20)	Nearing completion, 30' north of opening,

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
136	10-4-88	Philipsburg	Field/Porter (72)	Before, 10' southwest of opening
137	10-4-88	Philipsburg	Field/Porter (72)	Before, 15' east of opening
138	10-5-88	Philipsburg	Field/Porter (72)	Before
139	10-5-88	Philipsburg	Field/Porter (72)	During, 20' south of opening, assembling grate
140	10-5-88	Philipsburg	Field/Porter (72)	During, 10' north of opening, hand placing grate
141	10-5-88	Philipsburg	Field/Porter (72)	During, 20' north of opening, hand placing grate
142	10-21-88	Philipsburg	Field/Porter (72)	Near completion, at opening, hand placing pedestal concrete
143	9-87	Philipsburg	Granite Mtn (21)	Before
144	9-87	Philipsburg	Granite Mtn (21)	Before
145	8-24-89	Philipsburg	Granite Mtn (21)	After construction of fence
146	9-87	Philipsburg	Granite Mtn (22)	Before
147	10-4-88	Philipsburg	Granite Mtn (22)	Before, 20' southwest of opening
148	9-87	Philipsburg	Granite Mtn (22)	Before
149	9-87	Philipsburg	Granite Mtn (22)	Before
150	10-4-88	Philipsburg	Granite Mtn (22)	Before 5' south of opening
151	10-18-88	Philipsburg	Granite Mtn (22)	During, 20' west of opening, removing debris w/580D hoe
152	10-18-88	Philipsburg	Granite Mtn (22)	During, 40' southwest of opening, placing grate w/580D hoe
153	10-24-88	Philipsburg	Granite Mtn (22)	After, 35' southwest of opening
154	9-23-87	Philipsburg	Hobo Group (23)	Before
155	7-26-89	Philipsburg	Hobo Group (23)	Adit gate installed
156	9-87	Philipsburg	Hobo Group (26)	Before
157	7-26-89	Philipsburg	Hobo Group (26)	After culvert installation
158	8-8-89	Philipsburg	Hope Hill (29)	After installation of culvert
159	8-8-89	Philipsburg	Hope Hill (31)	After construction of fence
160	8-2-89	Philipsburg	Hope Hill (32)	After construction of fence
161	10-5-88	Philipsburg	Hope Hill (33)	Before, 10' west of opening
162	10-5-88	Philipsburg	Hope Hill (33)	Before, 10' east of opening
163	10-7-88	Philipsburg	Hope Hill (33)	During, 30' west of opening, assembling grate
164	10-7-88	Philipsburg	Hope Hill (33)	Near completion, 20' east of opening, hand placing grate
165	8-9-89	Philipsburg	Hope Hill (34)	After installation of culvert
166	11-1-88	Philipsburg	Hope Hill (35)	Before, 30' west of opening
167	11-1-88	Philipsburg	Hope Hill (35)	During, 20' west of opening, hand placing fill material
168	8-9-89	Philipsburg	Hope Hill (35)	After installation of culvert
169	11-1-88	Philipsburg	Hope Hill (36)	Before, 40' west of opening
170	11-1-88	Philipsburg	Hope Hill (36)	Before, 30' west of opening
171	11-1-88	Philipsburg	Hope Hill (36)	During, 20' west of opening, placing culvert w/J0510 hoe
172	11-1-88	Philipsburg	Hope Hill (36)	Near completion, 20' west of opening, placing fill material w/J051
173	8-7-89	Philipsburg	Hope Hill (37)	Before installation of culvert
174	8-7-89	Philipsburg	Hope Hill (37)	After installation of culvert
175	10-29-88	Philipsburg	Hope Hill (38)	Before, 30' south of opening
176	10-29-88	Philipsburg	Hope Hill (38)	Before, 60' south of opening
177	10-29-88	Philipsburg	Hope Hill (38)	During, 30' south of opening, installing culvert w/J0510 hoe
178	10-29-88	Philipsburg	Hope Hill (38)	Near completion, 25' south of opening, placing fill material
179	10-28-88	Philipsburg	Hope Hill (39)	Before, 30' west of opening
180	10-28-88	Philipsburg	Hope Hill (39)	During, 30' west of opening, preparing culvert bed w/J0510 hoe
181	10-28-88	Philipsburg	Hope Hill (39)	During, 15' west of opening, placing PVC drain pipe

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
182	10-28-88	Philipsburg	Hope Hill (39)	During, 25' west of opening, compacting culvert bed
183	10-28-88	Philipsburg	Hope Hill (39)	During, 25' west of opening, placing culvert w/JD510 hoe
184	10-28-88	Philipsburg	Hope Hill (39)	Near completion, 25' west of opening, compacting fill material
185	10-28-88	Philipsburg	Hope Hill (40)	Before, 30' southwest of opening
186	10-28-88	Philipsburg	Hope Hill (40)	During, 35' southwest of opening, backfilling w/JD510 hoe
187	10-28-88	Philipsburg	Hope Hill (40)	During, 20' southwest of opening, backfilling w/JD510 loader
188	10-29-88	Philipsburg	Hope Hill (40)	Near completion, 40' southwest of opening,
189	10-28-88	Philipsburg	Hope Hill (41)	Before, 20' west of opening
190	10-28-88	Philipsburg	Hope Hill (41)	During, 25' west of opening, placing culvert w/ JD510 loader
191	10-28-88	Philipsburg	Hope Hill (41)	During, 10' west of opening, culvert ready for fill material
192	10-29-88	Philipsburg	Hope Hill (41)	During, 15' west of opening, compacting fill material
193	8-7-89	Philipsburg	Hope Hill (41)	After installation of culvert
194	10-28-88	Philipsburg	Hope Hill (42)	Before, 40' west of opening
195	8-7-89	Philipsburg	Hope Hill (42)	After installation of culvert
196	8-24-89	Philipsburg	Hope Hill (43)	After fence construction
197	10-29-88	Philipsburg	Hope Hill (44)	Before, 20' west of opening
198	10-29-88	Philipsburg	Hope Hill (44)	Before, 10' east of opening
199	10-29-88	Philipsburg	Hope Hill (44)	During, 20' west of opening, backfilling w/JD 510 loader
200	08-08-89	Philipsburg	Hope Hill (44)	After backfill, with grasses sprouting
201	08-07-89	Philipsburg	Hope Hill (79)	Before culvert installation
202	08-07-89	Philipsburg	Hope Hill (79)	After installation of culvert
203	08-02-89	Philipsburg	Hope Hill (80)	After construction of fence
204	11-1-88	Philipsburg	Hope Hill (81)	Before, 40' west of opening
205	11-1-88	Philipsburg	Hope Hill (81)	Before, 15' west of opening
206	11-1-88	Philipsburg	Hope Hill (81)	During, 40' west of opening, placing culvert w/JD510 hoe
207	11-1-88	Philipsburg	Hope Hill (81)	During, 35' southwest of opening, placing fill material w/JD510 hoe
208	08-09-89	Philipsburg	Hope Hill (81)	After installation of culvert
209	10-31-88	Philipsburg	Hope Hill (82)	Before, 30' west of opening
210	10-31-88	Philipsburg	Hope Hill (82)	Before, 30' west of opening
211	10-31-88	Philipsburg	Hope Hill (82)	During, 10' west of opening, preparing culvert bed
212	10-31-88	Philipsburg	Hope Hill (82)	During, 20' west of opening, preparing culvert bed
213	10-31-88	Philipsburg	Hope Hill (82)	During, 30' west of opening, placing culvert w/ JD510 hoe
214	10-31-88	Philipsburg	Hope Hill (82)	During, 30' west of opening, placing fill material w/JD510 hoe
215	08-09-89	Philipsburg	Hope Hill (82)	After installation of culvert
216	08-24-89	Philipsburg	Hope Hill (91)	After installation of grate
217	08-07-89	Philipsburg	Hope Hill (93)	After installation of culvert
218	10-4-88	Philipsburg	Little Gem (45)	Before
219	10-10-88	Philipsburg	Little Gem (45)	Before
220	10-10-88	Philipsburg	Little Gem (45)	Before
221	10-4-88	Philipsburg	Little Gem (45)	Before, 15' west of opening
222	10-10-88	Philipsburg	Little Gem (45)	During, 35' west of opening, hand placing specialty grate
223	10-10-88	Philipsburg	Little Gem (45)	During, 15' west of opening, hand placing specialty grate
224	10-24-88	Philipsburg	Little Gem (45)	During, 35' west of opening, welding support legs
225	10-24-88	Philipsburg	Little Gem (45)	During, 20' west of opening, hand placing pedestal concrete
226	10-24-88	Philipsburg	Little Gem (45)	After, 15' west of opening
227	11-2-88	Philipsburg	Little Gem (46)	Before, 30' north of opening
228	7-87	Philipsburg	Little Gem (46)	Before

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
229	11-3-88	Philipsburg	Little Gem (46)	During, 25' north of opening, placing culvert
230	11-3-88	Philipsburg	Little Gem (46)	Near completion, 25' north of opening, compacting fill material
231	11-4-89	Philipsburg	Little Gem (47)	Before, 30' north of opening
232	7-87	Philipsburg	Little Gem (47)	Before
233	7-87	Philipsburg	Little Gem (47)	Before
234	11-4-88	Philipsburg	Little Gem (47)	During, 15' north of opening, removing timbers w/hoe
235	11-4-88	Philipsburg	Little Gem (47)	During, 15' north of opening, placing culvert w/hoe
236	11-4-88	Philipsburg	Little Gem (47)	Near completion, 15' north of opening, compacting fill material
237	9-87	Philipsburg	Lower Frost Crk (48)	Before
238	9-87	Philipsburg	Lower Frost Crk (49)	Before
239	10-25-88	Philipsburg	Puritan (50)	Before, 15' west of opening
240	10-26-88	Philipsburg	Puritan (50)	During, 40' south of opening, backfilling w/Michigan 75A loader
241	10-27-88	Philipsburg	Puritan (50)	During, 30' west of opening, backfilling w/Michigan 75A loader
242	10-28-88	Philipsburg	Puritan (50)	After, 30' west of opening
243	8-14-84	Philipsburg	San Francisco	Site Overview
244	11-9-88	Philipsburg	San Francisco (51)	Before, 20' north of opening
245	11-9-88	Philipsburg	San Francisco (51)	Before, 20' south of opening
246	11-9-88	Philipsburg	San Francisco (51)	During, 10' north of opening, hand digging post holes
247	11-9-88	Philipsburg	San Francisco (51)	Near completion of fencing
248	9-87	Philipsburg	Scratch All (52)	Before
249	9-87	Philipsburg	Scratch All (52)	Before
250	9-87	Philipsburg	Scratch All (52)	Before
251	8-15-89	Philipsburg	Scratch All (52)	After construction of fence
252	10-31-88	Philipsburg	Scratch All (53)	Before, 20' north of opening
253	10-31-88	Philipsburg	Scratch All (53)	Before, 20' east of opening
254	9-87	Philipsburg	Scratch All (53)	Before
255	11-1-88	Philipsburg	Scratch All (53)	During, 40' north of opening, backfilling w/ Michigan 75A loader
256	11-1-88	Philipsburg	Scratch All (53)	During, 40' north of opening, backfilling w/ Michigan 75A loader
257	11-1-88	Philipsburg	Scratch All (53)	After, 25' north of opening
258	8-15-89	Philipsburg	Scratch All (54)	After construction of fence
259	11-8-88	Philipsburg	Scratch All (55)	Before, 20' west of opening
260	11-8-88	Philipsburg	Scratch All (55)	During, 20' west of opening, hand digging post holes
261	10-12-88	Philipsburg	Scratch All (77)	Before, 20' south of opening
262	10-12-88	Philipsburg	Scratch All (77)	Before, 10' north of opening
263	10-17-88	Philipsburg	Scratch All (77)	During, 10' south of opening, leveling site w/850 case
264	10-17-88	Philipsburg	Scratch All (77)	During, 30' south of opening, assembling grate w/850 case
265	10-24-88	Philipsburg	Scratch All (77)	During, 20' south of opening, welding support legs
266	10-24-88	Philipsburg	Scratch All (77)	After, 25' south of opening, hand placing pedestal concrete
267	11-2-88	Philipsburg	Shapleigh (56)	Before, 40' west of opening
268	9-88	Philipsburg	Shapleigh (56)	Before
269	11-2-88	Philipsburg	Shapleigh (56)	During, 45' west of opening, placing culvert w/JD510 hoe
270	11-2-88	Philipsburg	Shapleigh (56)	During, 30' west of opening, placing fill material w/hoe
271	8-24-89	Philipsburg	Shapleigh (56)	After installation of culvert
272	8-24-89	Philipsburg	Shapleigh (92)	After installation of culvert
273	9-89	Philipsburg	South Franklin Hill	Fence completed
274	9-87	Philipsburg	Trout (57)	Before

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
275	10-17-88	Philipsburg	Trout (57)	Before, 15' east of opening
276	10-17-88	Philipsburg	Trout (57)	During, 25' southwest of opening, backfilling w/850 case
277	10-17-88	Philipsburg	Trout (57)	During, 15' east of opening, backfilling w/850 case
278	10-17-88	Philipsburg	Trout (57)	After, 15' east of opening
279	11-1-88	Philipsburg	Trout (58)	Before, 20' north of opening
280	11-7-88	Philipsburg	Trout (58)	During, 25' north of opening
281	8-24-89	Philipsburg	Trout (58)	After construction of fence
282	11-2-88	Philipsburg	Trout (59)	Before, 20' west of opening
283	11-3-88	Philipsburg	Trout (59)	During, 20' west of opening, placing culvert w/JD510 hoe
284	10-6-88	Philipsburg	Trout (75)	Before, 20' northwest of opening
285	9-89	Philipsburg	Trout (75)	After fence construction
286	8-17-89	Philipsburg	Trout (94)	After construction of fence
287	8-17-89	Philipsburg	Trout (95)	Before installation of culvert
288	8-17-89	Philipsburg	Trout (95)	Culvert installed and cemented into place
289	9-87	Philipsburg	True Fissure	Site Overview
290	11-8-88	Philipsburg	True Fissure (61)	Before
291	11-8-88	Philipsburg	True Fissure (61)	Before
292	8-8-89	Philipsburg	True Fissure (61)	After construction of culvert
293	11-8-88	Philipsburg	True Fissure (62)	Before, 20' northwest of opening
294	11-8-88	Philipsburg	True Fissure (62)	Before, 30' northwest of opening
295	9-87	Philipsburg	True Fissure (62)	Before
296	9-87	Philipsburg	True Fissure (62)	Before
297	8-89	Philipsburg	True Fissure (62)	Fence completed
298	7-87	Philipsburg	Wenger (63)	Before
299	10-6-88	Philipsburg	Wenger (63)	Before, 10' east of opening
300	10-6-88	Philipsburg	Wenger (63)	Before, 10' north of opening
301	10-10-88	Philipsburg	Wenger (63)	During, 5' west of opening, assembling grate
302	10-24-88	Philipsburg	Wenger (63)	During, 20' northwest of opening, welding support legs
303	10-24-88	Philipsburg	Wenger (63)	During, 15' west of opening, hand placing pedestal concrete
304	8-16-89	Philipsburg	Wenger (63)	After installation
305	7-87	Philipsburg	Wenger (64)	Before
306	7-87	Philipsburg	Wenger (64)	Before
307	8-16-89	Philipsburg	Wenger (64)	After installation of cable net
308	7-87	Philipsburg	Wenger (65)	Before
309	7-87	Philipsburg	Wenger (65)	Before
310	8-16-89	Philipsburg	Wenger (65)	After installation of cable net
311	7-87	Philipsburg	Wenger (66)	Before
312	8-16-89	Philipsburg	Wenger (66)	Near completion of cable net install
314	7-87	Philipsburg	Whitehorse (67)	Before
315	7-87	Philipsburg	Whitehorse (67)	Before
316	8-16-89	Philipsburg	Whitehorse (67)	Adit door completed
317	7-87	Philipsburg	Whitehorse (68)	Before
318	8-16-89	Philipsburg	Whitehorse (68)	After construction of cable net

PHASE 21 CONSTRUCTION PHOTO LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	DESCRIPTION
319	6-87	South Boulder	Brooklyn (1)	Site Overview
320	6-87	South Boulder	Brooklyn (1)	Before
321	7-24-89	South Boulder	Brooklyn (1)	Before culvert installation
322	6-87	South Boulder	Brooklyn (1)	Before
323	6-87	South Boulder	Brooklyn (1)	Before
324	8-1-89	South Boulder	Brooklyn (1)	Portal area cleared of debris
325	8-1-89	South Boulder	Brooklyn (1)	Culvert being installed
326	8-1-89	South Boulder	Brooklyn (1)	Culvert installed
327	10-19-88	South Boulder	Copper Creek (2)	Before, 15' southwest of opening
328	10-19-88	South Boulder	Copper Creek (2)	Before, 5' Northwest of opening
329	10-19-88	South Boulder	Copper Creek (2)	During, 15' southwest of opening, removing cribbing
330	10-20-88	South Boulder	Copper Creek (2)	During, 15' southwest of opening, backfilling w/580 case loader
331	10-20-88	South Boulder	Copper Creek (2)	After, 15' southwest of opening
332	10-19-88	South Boulder	Copper Creek (3)	Before, 10' north of opening
333	10-19-88	South Boulder	Copper Creek (3)	Before, 5' north of opening
334	10-19-88	South Boulder	Copper Creek (3)	During, borrow area, loading 580 case bucket
335	10-19-88	South Boulder	Copper Creek (3)	During, 15' west of opening, backfilling w/580 case loader
336	10-19-88	South Boulder	Copper Creek (3)	During, 25' west of opening, backfilling w/580 case loader
337	10-20-88	South Boulder	Copper Creek (3)	After, 20' of opening
338	8-87	South Boulder	Gold Hill (8)	Before
339	7-20-89	South Boulder	Gold Hill (8)	During construction of adit door
340	8-01-89	South Boulder	Gold Hill (8)	Adit door installed
341	6-87	South Boulder	Moonlight (4)	Site Overview
342	6-87	South Boulder	Moonlight (4)	Before
343	6-87	South Boulder	Moonlight (4)	Before
344	7-20-89	South Boulder	Moonlight (4)	Before installation of adit door
345	10-20-88	South Boulder	Moonlight (5)	Before, 15' northwest of opening
346	10-20-88	South Boulder	Moonlight (5)	During, 10' north of opening, removing portal timbers
347	10-20-88	South Boulder	Moonlight (5)	During, 15' north of opening, installing PVC drain
348	10-20-88	South Boulder	Moonlight (5)	During, 15' northwest of opening, placing culvert w/580 case hoe
349	10-20-88	South Boulder	Moonlight (5)	After installation of culvert
350	6-88	South Boulder	Princeton (6)	Before
351	10-5-88	South Boulder	Princeton (6)	Before, 15' north of opening
352	6-88	South Boulder	Princeton (6)	Before
353	10-5-88	South Boulder	Princeton (6)	Before, 5' east of opening
354	10-18-88	South Boulder	Princeton (6)	During, 5' east of opening, assembling grate
355	10-18-88	South Boulder	Princeton (6)	During, 15' west of opening, hand digging pedestal holes
356	10-20-88	South Boulder	Princeton (6)	During, support leg prior to concrete pedestal
357	10-20-88	South Boulder	Princeton (6)	During, placing pedestal concrete
358	8-87	South Boulder	Travonia (7)	Before
359	8-87	South Boulder	Travonia (7)	Before
360	7-20-89	South Boulder	Travonia (7)	After construction of adit door
361	8-23-89	South Boulder	Travonia (7)	Drilling holes for anchor bolts
362	8-23-89	South Boulder	Travonia (7)	Cutting bolts to appropriate length
363	8-23-89	South Boulder	Travonia (7)	Welding bolts to frame

